THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · The Railway Record.
Railways Illustrated · Established 1835 · The Railway Official Gazette

Published Every Friday

at

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "Trazette Parl., London"
Telephone No.: Whitehall 9233 (8 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling
Registered at the General Post Office, London, as a Newspaper

Vol. 84 No. 19 Friday, May 10, 1946

CONTENTS

	PAGE
Editorial Notes	501
Sir Murrough J. Wilson	504
Railway (London Plan) Committee Report	504
The Reichsbahn Today	505
Clasp Brakes	505
San Francisco—New York	506
Letters to the Editor	507
The Scrap Heap	508
Overseas Railway Affairs—India, South Africa, Egypt, United States, Western Australia	509
Publications Received	510
Coal and Its Post-War Carriage on British Railways	511
Railway Land Grants in the U.S.A.	513
Railways in Iraq, 1941-43	514
Rebuilt "K4" Class 2-6-0 Locomotive, L.N.E.R.	516
A New Centreless Grinding Machine	518
Personal	519
News Articles	522
Notes and News	526
Stock Market and Table	528

DIESEL RAILWAY TRACTION SUPPLEMENT

The May issue of The Railway Gazette *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1*s.*

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays, 9.30 *a.m. till* 5.30 *p.m.*
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Two New L.M.S.R. Vice-Presidents

ELSEWHERE in this issue we publish portraits and biographical details of Mr. F. A. Pope and Mr. R. A. Riddles, who have been appointed Vice-Presidents of the L.M.S.R. There are now four Vice-Presidents on the Executive Committee of the company; the other two are Mr. T. W. Royle and Mr. G. L. Darbyshire. This is the same number as was included in the original Executive, when it was created by Lord Stamp in 1926. The first Vice-Presidents, who took office on January 1, 1927, were Mr. S. H. Hunt, Mr. J. Quirey, Mr. J. H. Follows and Mr. R. W. Reid. Specific duties were assigned. Mr. Hunt and Mr. Follows were Vice-Presidents for Railway Traffic Operating & Commercial Sections, Mr. Quirey for Accounting & Service Departments, and Mr. Reid for Works & Ancillary Undertakings (excluding the Hotel Department). These descriptions were maintained with very slight alterations (when Sir William Wood was appointed a Vice-President in 1930, his designation was "Finance & Service") until just before the recent war. When Mr. G. L. Darbyshire became a Vice-President in 1943, no specific designation was attached in the official announcement, although it was stated that he succeeded Sir Ernest Lemon, who held the office for Operating & Commercial Matters. Nor did Mr. Royle's appointment in 1944 carry any designation. The recent appointments follow the resignation of Sir Harold Hartley, who became Vice-President (Works & Ancillary Undertakings & Director of Scientific Research) in 1930. Obviously the Executive organisation of the L.M.S.R. is flexible. When Mr. H. V. Mosley who, as Chief Executive Officer for New Works & Parliamentary Business, had been a member of the Executive Committee since its early days, retired in 1944, no appointment was made to fill in the position, his functions being transferred to the Vice-Presidents In the circumstances of the past five years the responsibilities of the respective Vice-Presidents have varied from time to time, and it has been noticeable in the past couple of years that Mr. Royle has been representing the Executive in the many discussions with local planning authorities throughout Great Britain.

* * * *

Traders' Opposition to Transport Nationalisation

The Association of British Chambers of Commerce has issued a report on nationalisation of inland transport in which it emphasises that traders and transport users are opposed to nationalisation of rail, road or other forms of inland transport. It believes that arrangements can be made which will enable rail and road to be operated on a sound economical and financial basis. Mere reversion to pre-war conditions would not be a solution of the problem, as the position of the railways in relation to the roads then was very unsatisfactory. Experience does not support the suggestion that either increased economy or efficiency can be looked for from nationalisation. The Association suggests that there should be full co-operation between road and rail, so that each would have an interest in seeing that traffic passed by the most economical route. The railways should handle traffic between railhead points at important centres, and the function of distribution to and from the railhead, and short direct hauls of under 30 miles, should be the special province of road transport, which would have to assume the obligations of common carriers. The railways should be relieved of the financial burden of maintaining lines of strategic or social importance, which are uneconomic from a transport point of view, and should also be relieved of burdens which should properly be borne by the local authority or the State, such as bridge and road making, and maintenance. A tribunal for settling equitable charges and terms and conditions of carriage is suggested.

* * * *

British Railway Investments in Cuba

At one time British interests in Cuba were considerable and substantial returns were paid on them. This was especially the case with the ordinary capital of the United Railways of the Havana & Regla Warehouses, but the position in recent years has deteriorated, and according to the statistics published by *The South American Journal* the total of £27,383,585 of British capital invested in Cuba at the end

of 1945 received interest amounting to no more than £240,820, or 0.8 per cent. No interest was forthcoming on £22,602,383. The bulk of British interests in Cuba is now concerned with the railways, which means almost entirely the United Railways of Havana, which at one time paid dividends of 7 per cent. and 8 per cent. and often showed profits which would have permitted distributions at twice this rate. Increased working costs and the smaller market for Cuban cane sugar has had an unhappy effect on the finances of this company, and indeed on the prosperity of the island. As a result, the total amount of British capital invested in the railways at the end of 1945, £26,132,345, received only £80,258, or 0.3 per cent., and £22,602,383 received no interest at all. The miscellaneous group of British investments in Cuba totals £1,251,240, receiving interest of £160,562, or 12.8 per cent., which compares with 9.8 per cent. for 1944.

* * * *

Overseas Railway Traffics

After earlier declines, Argentine North Eastern traffics showed increases of ps. 51,700 and ps. 57,800 in the 42nd and 43rd weeks, the aggregate receipts being now ps. 35,100 behind those of the preceding year. Entre Rios results continued to improve, a gain of ps. 14,300 in the week ended April 20 being followed by one of ps. 63,500 in the next seven days. Increases in the fortnight under review on the Central Argentine were ps. 714,024; on the Buenos Ayres Great Southern ps. 615,000; and on the Buenos Ayres Western ps. 307,000. Buenos Ayres & Pacific takings lost ps. 41,000 in the two weeks, but the decrease of ps. 8,000 in the week ended April 27 compared with one of ps. 33,000 in the preceding week. Results are compared in the following table:—

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffics	Inc. or dec.
Buenos Ayres & Pacific*	43	2,382	− 8	98,282	+ 3,948
Buenos Ayres Great Southern*	43	3,715	+ 341	154,264	+ 9,184
Buenos Ayres Western*	43	1,285	+ 98	51,845	+ 3,026
Central Argentine*	43	3,329	+ 523	135,826	+ 11,239
		£	£	£	£
Canadian Pacific	17	1,485,000	− 257,600	18,742,000	− 1,264,500

* Traffic returns in thousands of pesos

Canadian Pacific results showed a decrease of £670,400 in the month of April.

* * * *

Great Northern Railway (Ireland) Timetables

A timetable with a pictorial front cover and a folding map of the system is something of a novelty in these days, when three of the British main-line companies have adopted the standard "Bradshaw" format. Another individual feature of the Great Northern Railway (Ireland) timetable book dated April 14 is the printing of all Sunday train services in red. The Belfast-Dublin main line now has four through restaurant car trains each way on weekdays and two on Sundays, with a best timing of 3 hr. 5 min. On the Belfast-Londonderry line there are five through restaurant car trains westbound and four eastbound on weekdays, and two without restaurant cars on Sundays. An additional weekday train each way with restaurant car between Portadown and Londonderry, will run during July and August. Buffet cars for the service of light refreshments are run on two weekday trains each way between Belfast and Cavan, a new facility compared with the preceding winter timetables. The April 14 timetables will remain in operation until further notice, and include various services on all lines which will come into operation in June or later months during the summer.

* * * *

Coal Transport in Great Britain

In ventilating the vexed question of the use of high-capacity mineral wagons on British railways, Mr. H. Kelway-Bamber, M.V.O., put forward some stimulating arguments and constructive suggestions in his paper, "Coal and its Post-War Transport on British Railways," which he read before the Institution of Locomotive Engineers on May 1. The subject has been attacked energetically enough by engineers for many years and frequently has been a controversial subject in the correspondence columns of this journal. In the daily press, too, the arguments for and against have appeared frequently, though here the protagonists often show more temerity than practical knowledge of the subject. The moment chosen for the discussion on this paper was opportune in view of the political aspects involved and the undecided fate of privately-owned wagons. The latter figured largely, as was only to be expected, in the ensuing discussion. Mr. Kelway-Bamber, whose extensive Indian experience entitled him to speak with authority, put forward a suggested design for a four-wheel 22-ton self-discharging wagon, as a time and labour saver, giving reduced length of track occupied and lessening shunting operations for a given tonnage hauled. This was obviously a compromise; his ideal was an eight-wheel (double-bogie) wagon of at least twice that capacity. In the lively discussion which followed, Sir William Stanier made the interesting point that two four-wheel 20-ton wagons gave a better load/tare ratio than one eight-wheel 40-ton wagon; and the latter type did not lead in this direction for capacities less than 50-60 tons.

* * * *

Further Decline in Home Railway Traffics

The Home railway traffics for the four weeks ended April 21 showed a total decrease of £3,414,000 over a similar period of a year ago. The Easter holiday fell within both the comparable periods, but this year the four weeks did not include Easter Monday. Receipts from passengers this year were lower by £891,000 and merchandise receipts showed a fall of £2,671,000. There was an increase in coal and coke receipts of £148,000. Figures for the four weeks and the aggregate for the sixteen weeks of the year, compared with the like periods of 1945, are shown in the following table:—

FOUR WEEKS ENDED APRIL 21, 1946

	1946 £000	1945 £000	+ or − £000	Per cent. + or −	1939 £000
Passengers ...	15,259	16,150	− 891	− 5·8	7,808
Merchandise ...	8,121	10,792	−2,671	−32·8	4,162
Coal and coke	3,699	3,551	+ 148	+ 0·4	2,587
Total ...	27,079	30,493	3,414	−11·6	14,557

AGGREGATE FOR THE SIXTEEN WEEKS OF THE YEAR

	1946 £000	1945 £000	+ or − £000	Per cent. + or −	1939 £000
Passengers ...	54,869	56,080	−1,211	− 2·4	27,330
Merchandise ...	32,053	41,886	−9,833	−30 7	15,983
Coal and coke	14,678	14,683	− 5	− 0·04	11,223
Total ...	101,600	112,649	−11,049	−10·8	54,536

The cessation of much Government traffic is reflected in the decline in merchandise receipts of £9,833,000 during the current year.

* * * *

N.U.R. Delegation to Russia

A delegation of the National Union of Railwaymen recently has returned to this country after a tour of the Soviet Union, in the course of which the operating methods and the working conditions of the Soviet railways were studied. The delegation visited Moscow, Leningrad, and the railwaymen's sanatoria at Sotchi on the Black Sea. Mr. J. E. Binks, President of the N.U.R., broadcast a message to the Soviet people during the visit. He told them that the negotiating machinery for Soviet railway workers was similar to that in Great Britain, except after the final decision was given. He had observed the way in which the names of workers responsible for exceptional efforts were publicised at Soviet railway depots, and was assured that this practice was appreciated. In Great Britain the Labour Party had promised to nationalise the railways in the near future, and it was felt that this would soon be done. Regarding amenities for passengers on Soviet railways, Mr. Binks said the delegation had been impressed by the provision of rest rooms, with beds for children, at stations, although the frequency of service on British railways made facilities on such a scale unnecessary in this country.

* * * *

Southend Joint Transport

A further example of transport co-ordination and the satisfactory solution of passenger road transport problems over a wide and busy area is afforded by the co-ordination agreement between Southend-on-Sea Corporation, the Westcliff-on-Sea Motor Services Limited, and the Eastern National Omnibus Co. Ltd., which has now received the approval of the Minister of Tranport and is being put into operation as soon as the necessary licences are granted by the Traffic Commissioner.

Both the L.N.E.R. and the L.M.S.R. are interested as large shareholders in the Eastern National Company. This adds one more to those schemes of transport co-ordination with municipalities which Sir Frederick Heaton has initiated during the past fifteen years, and developed successfully for the Tilling Group of Companies. At Keighley, Gloucester, Bristol, Plymouth, Brighton, and now at Southend, important and complex urban areas have been dealt with comprehensively from the road transport point of view. In these schemes co-ordination has been achieved, not by the creation of an elaborate system of protective fares or the development of restrictive "zones of influence," but by so arranging matters that, while the identity of the various participants in a scheme remains distinct, the road transport services themselves will work as a whole.

* * * *

Big Plans for Rail and Road

On Monday last two plans, both involving heavy expenditure for improving transport facilities in this country, were made known by the Ministry of Transport. In the morning Professor Sir Charles Inglis, Chairman of the Railway (London Plan) Committee, explained to press representatives the salient features of the report to the Minister on which his Committee has been engaged since February, 1944. This is a lengthy report and bears evidence of the time and thought given by members of the Committee. It is dealt with in some detail in an editorial article on page 504 and a summary of the scheme is given on page 522. An expenditure of some £230,000,000, spread over thirty years, is recommended. On Monday afternoon the Minister of Transport announced the plan of the Government for developing the highway system. To include major works of construction and reconstruction, a period of ten years is envisaged, and the total cost of the first year's work alone is put by Mr. Barnes as "anything up to £80,000,000." This is some ten times the average expenditure which the Railway (London Plan) Committee envisages for railway works. The roadway project embraces the building of the first motor roads for this country, the improvement of a substantial part of the main road routes of the country, and the construction of a London orbital road. It should be noted that the road scheme is a definite project by the Ministry and the railway plan only recommendations by the Committee. Therefore there seems some justification for the feeling in certain quarters that the Ministry is more road minded than railway minded.

* * * *

Iraq and the War

In 1940 it became increasingly obvious that one of Hitler's major objectives was the seizure of the great oil-supplying countries, Iraq and Persia, and this was confirmed by Rashid Ali's abortive attempt at a *coup*, with German backing, in April and May, 1941. From the moment Hitler invaded Russia in the following month, and even more so when his armies had advanced into Caucasia, both the oilfields were seriously threatened. Iraq in particular was of vital importance, as it was in the direct line of his prospective advance, and by the end of that year it had also become one of the aid-to-Russia supply routes. To improve this line of communications, from Basra on the Persian Gulf to Khaniqin on the Iraqi—Persian frontier, the Kut-el-Amara—Baquba railway was hurried to completion in December, 1942, though we now learn* that its junction with the Baghdad-Khaniqin line is actually at Jasimiyah near Baquba. The same source of information also reveals that another new line was built from Shuaibah Junction—10 miles from Basra on the line to Baghdad—to a new port on an inlet from the Persian Gulf, to give alternative access from the sea to the Iraqi railway system, independent of Basra and its river approach, which was liable to be closed or obstructed.

* * * *

Indian Railway-Built Bridge Spans

The administration of the North Western Railway (India) recently decided that the seven new 105-ft. truss spans, required for regirdering the Nari Bridge on the Bolan line to Quetta, should be fabricated in the railway bridge workshops at Jhelum. The 600 tons of new girderwork required constitutes a record in tonnage and size of span for an order placed in these shops. The main girders, each weighing 24 tons, are the first Warren trusses with verticals to be used for a half-through span bridge on the N.W.R. The arrangement of the diagonal web members differs from that of the corresponding members in the Pratt or N-type spans generally used, and has been found to simplify fabrication considerably. Though all cutting and drilling had been done to jigs, it was considered advisable to assemble the first new Nari span in Jhelum yard, so as to ensure that all the parts would come together without trouble, so perfect was the fit in every part, however, that it was decided to assemble the remaining six spans at site, thus justifying the confidence placed in the high standard of workmanship in the shops. The new spans, though weighing only 85 tons, will carry the heaviest main-line standard locomotives with 22½-ton axle loads crossing them at unrestricted speed. The old wrought-iron double Warren truss spans weigh 120 tons and will not carry such locomotives even at speeds of 18 m.p.h., to which all trains are at present restricted.

* * * *

Pre-Stressed Concrete Sleeper Developments

In an interesting joint paper read before the Society of Engineers on Monday last, Mr. R. S. V. Barber and Mr. D. R. Lester explained the methods by which the mass production of pre-stressed concrete railway sleepers for main lines was carried out at the Tallington factory of Dow-Mac (Products) Limited. High-tensile steel of 100 tons/sq. in. ultimate tensile strength is used for the reinforcement and is subjected to a high-tensile stress which afterwards is used to maintain a permanent compressive stress in the concrete. It was claimed that the initial compression in the concrete ensures that no hair cracks will develop under design load and practical conditions, and that in consequence long service in the track is assured. Mr. Dowsett said he accepted the criterion of a perfect sleeper requiring that its life was equal to that of the rail it supports, thus reducing track maintenance to a minimum. The pre-stressed concrete sleepers he was describing have been under test on the four main-line railways. The first delivery to the L.M.S.R. was in 1942, for installation in the fast down track at Cheddington. The time which has elapsed does not permit of conclusive data as to the ultimate life of the sleeper, but in the discussion after the paper Mr. V. A. M. Robertson, Chief Civil Engineer, Southern Railway, and Mr. J. Briggs, Assistant Engineer (Permanent Way) L.M.S.R., spoke favourably of the sleepers, and Mr. F. C. Johansen of the L.M.S.R. Research Department, commented on the great care in the control of raw materials which he had observed during manufacture.

* * * *

2-6-0 *versus* 0-6-0 Locomotives

In an article by Mr. H. C. Casserley, which appeared in the November-December, 1945, issue of our associated contemporary *The Railway Magazine*, the interesting point was made that the once-popular 2-6-0 type had not figured in new construction for several years, apart from a few additions to the L.M.S.R. Northern Counties Committee in Ireland. The abandonment of this type is all the more remarkable in view of the vast numbers constructed, particularly during the 1920s and early 1930s. On the L.N.E.R., however, there has been an interesting experimental rebuilding of a former three-cylinder 2-6-0 which is designed to increase its usefulness and enable it to oust the "J39" class of 0-6-0 because its weight distribution (as modified) is more acceptable to the Chief Engineer than that of the "J39," which has a leading axle load of 19 tons 11 cwt. The rebuilt locomotive, which we describe elsewhere in this issue, is obviously a handy and well-proportioned machine, and although (in spite of the higher-pressed boiler) its tractive effort is some 4,500 lb. less than in its original state, it can still show a better figure in that direction than the "J39." The avowed object of the experiment is to see whether in the future the 2-cylinder 2-6-0 will prove of greater utility than the 0-6-0. The basis of comparison is of the utmost importance: in mere axle loading, for instance, the rebuilt engine, which has 19 tons 14 cwt. on its driving wheels, is a worse sinner than is the "J39."

* From the article entitled "Railways in Iraq, 1941-43" published elsewhere in this issue

Sir Murrough J. Wilson, K.B.E.

ON another page we record with regret the death of Sir Murrough J. Wilson, Deputy Chairman of the London & North Eastern Railway Company, and give an account of his remarkable career. At the age of 18 Sir Murrough Wilson entered the service of the old North Eastern Railway and spent about nine years in the operating and locomotive running departments. He would probably have made the railway his life's work if the loss of his father and an elder brother in the South African War had not left him heir to the Cliffe Hall estate, which lies on the south bank of the Tees near the point where Watling Street passes straight across the river from Yorkshire into County Durham. Ten years later Sir Murrough became a director of the North Eastern Railway at the early age of 37 and in 1923 was selected as one of the representatives of that system on the L.N.E.R. board.

From the first he took an active part in the affairs of the amalgamated company. His experience with the Navy, Army & Air Force Institutes fitted him to follow Colonel W. J. Galloway as Chairman of the Hotels Committee, but perhaps his most useful period of office came when he succeeded Lord Grey of Fallodon as Chairman of the Traffic Committee and of the North Eastern Area Local Board. Sir Murrough Wilson was thoroughly happy in dealing with proposals for improving railway working. He often went over sections of the line with "officers' specials" and delighted in discussing operating questions with the staff who were handling the traffic. His appointment as Deputy Chairman in 1934, in succession to Lord Faringdon, did not interfere with his keen interest in railway operating matters. He was also willing at any time to take part in staff functions, whether the occasion was a cricket match, an athletic meeting, or a debate on a railway subject. His cheery presence will be much missed by many railwaymen of all ranks, especially at York and Darlington, where he had come and gone amongst them for over 50 years.

* * * *

Another Plan for London Railways

THE Railway (London Plan) Committee was set up by the Minister of War Transport in February, 1944, after consultation with the Minister of Town & Country Planning, to investigate the technical and operational aspects of the suggestions made in the County of London Plan the previous year by Professor Abercrombie in so far as they related to the main-line and suburban railway system of London, both surface and underground. The main recommendations of the County of London Plan were dealt with in our July 16, 1943, issue. The Committee was asked to bear in mind that Professor Abercrombie's suggestions were intended to contribute towards and form part of a comprehensive scheme for the re-development of the area in question.

The report* which has been submitted to the Minister deals largely with traffic on a north to south axis through London. It does not deal with the suggestions which were made in the County of London Plan for dealing with the northern termini or with Paddington, which presumably will provide subjects for another report. One of the main recommendations is that all Southern Railway suburban services now terminating at London Bridge, Charing Cross, Cannon Street, and Holborn Viaduct Stations should be put underground by the building of new lines in deep level tunnels. These new lines would provide through services between the suburbs south of the Thames and the suburban lines of the other main-line companies north of the river, and would give direct access to many parts of the West-end and City not now rail-connected.

The total length of new lines in tunnel envisaged by the plan, including other projected railways, providing a similar cross-London service, would be over 100 route miles. This scheme would do away with the railway bridges and viaducts between Westminster and London Bridges, and also would lead ultimately to the disappearance of Charing Cross, Cannon Street, Holborn Viaduct and Blackfriars Stations, with their present high-level approaches. Waterloo Station would remain, but a new station would be built on the site of the present Waterloo Junction, and London Bridge would be replaced by a station about half a mile to the south-east at Tower Bridge Road.

The Committee holds as a broad principle that in dealing with the basic and practical considerations of the London Transport problem, advantage should be taken of the superior speed and safety of the railways for the longer distances, to relieve congestion on the roads. There are a profusion of stations in London conveniently placed for business communities, and improvement and adaptation of existing facilities wherever they would serve the purpose, are certainly preferable to sweeping changes.

On this existing framework, therefore, the Committee proposes to superimpose certain new railways. One of the major proposals of the County of London Plan is accepted by the Committee and given first priority. This is for two north-south tunnels to replace the line, mostly on viaduct, from Snow Hill, Farringdon, to Loughborough Junction. The suggestion made by the plan for a deep-level loop connecting Waterloo, Charing Cross, Blackfriars, Cannon Street, and London Bridge is rejected on the ground that loop-working at deep level is not a practicable proposition. As will be seen from the article and map elsewhere in this issue, certain new underground railways are also proposed.

The proposals put forward in the report are recommendations only. They have not been considered by the departments concerned, nor is the Government in any way committed to them. The scheme obviously could be financed only with Government assistance. It is estimated that the scheme would cost, at pre-war price levels, about £140,000,000. The cost at present-day prices (taken at 65 per cent. above pre-war) would be about £230,000,000. Both figures exclude the cost, which would be heavy, of electrification, widening, and other work, on main-line railways outside the proposed new tunnels. The Committee is advised that under the most favourable conditions completion of the underground railway works would take at least thirty years, and it recommends a system of priority of the proposals, of which details and costs are given, and in which the north and south tunnels take first place. The Committee believes that the scheme put forward, large though it is, is the smallest that can be devised to serve both its purposes at once, that is, to relieve London's traffic necessities and also make a contribution to station replanning. If something smaller is required, involving the sacrifice of one or the other aims, it would be better to start again than to pick and choose from the proposals.

It is important to note that, in drawing up its proposals, the Committee has made no attempt to study in any detail the complex engineering problems involved, the solution of which may well lead to modifications of the scheme. The proposals have not been examined officially by the main-line companies or by the London Passenger Transport Board and under no foreseeable traffic conditions could they be regarded as commercial propositions.

As we see it, the underlying principle of the Committee's proposals is in effect based on the practice of the Underground (now the London Passenger Transport Board), which has no terminals in west or central London. It is a practice we have long thought might be adopted by the main-line railways. In fact, the Committee's scheme might possibly be implemented in part as a commencement. As a first stage, outside Victoria the Southern's suburban trains would dip down to an underground station under the existing station and emerge north of Kings Cross. There would be an underground suburban station under Kings Cross. On the new main-line-sized "tube" there would probably be intermediate stations at Piccadilly and Holborn. Following the practice of the L.P.T.B. where one service runs from Edgware in the north to Morden in the south, the Southern and London & North Eastern suburban services would run through London from north to south. Thus, both the present Victoria and Kings Cross Stations no longer would have to accommodate suburban traffic and the whole of these be available for long-distance trains.

Similarly, L.M.S.R. suburban trains now terminating at Euston by another main-line-sized "tube" would run through to the Southern Railway and *vice versa*. There would be an Underground station at Paddington for electrified suburban traffic which would link up with Liverpool Street, thus leaving the whole of Paddington and the whole of Liver-

* Railway (London Plan) Committee, 1944: Report to the Minister of Transport, including three maps. H.M. Stationery Office. Price 2s. 6d.

pool Street free for long-distance trains. By through running from north to south and east to west costly terminals for suburban traffic would be avoided, and the capacity of the existing terminals be increased by over 50 per cent. for long-distance traffic at trivial capital expenditure.

* * * *

The Reichsbahn Today

SINCE the total surrender of Germany to the United Nations on May 8, 1945, many railways in German-conquered territories have reverted to their former States (for example, Alsace-Lorraine, Belgium, Czechoslovakia, Luxembourg, and Poland). Also, the railways in the area of Eastern Germany now incorporated into Poland have been transferred to the control of the Polish State Railways. The remaining railways of the Old Reich are under the control of the four occupying powers in their respective Zones, and co-ordination is provided by a four-power Transport Directorate forming part of the Allied Control Authority at Berlin. The Zonal and Divisional Managements are as follow:—

British Zone
Zonal Management : Bielefeld
Divisional Managements :
Cologne, Essen, Hamburg, Hanover, Münster, Wuppertal

French Zone
Zonal Management : Speyer
Divisional Managements :
Mainz, Saarbrücken, Karlsruhe

U.S.A. Zone
Zonal Management : Frankfurt-on-Main
Divisional Managements :
Augsburg, Frankfurt-on-Main, Kassel, Munich, Nuremberg, Regensburg, Stuttgart

Soviet Zone
Zonal Management : Berlin
Divisional Managements :
Berlin, Cottbus, Dresden, Erfurt, Halle, Griefswald, Magdeburg, Schwerin

The respective mileages of standard-gauge railway in these zones are: 7,721 miles in the British zone; 4,753 miles in the French zone; 8,114 miles in the U.S.A. zone; 7,922 miles in the Soviet zone; making a total of 28,510 route miles. The mileage of standard-gauge railway in the Old Reich in 1937 (before the control of the Austrian Federal Railways from March 18, 1938) was 39,851, of which 2,035 miles were electrified.

Rail travel in Germany today presents a panorama of desolation, not only in the ruined towns, but in the enormous destruction of railway material. Nearly every station has its quota of wrecked rolling stock, sometimes on a great scale; once fine stations, where the structure stands, are glassless and open to the sky. The main yard at Hamm is a shambles, though one of the subsidiary yards is working again. At intervals along the track a string of rusting debris marks the spot where the R.A.F. had shot up a moving train. The cumulative effect is shattering, and not a little depressing. It seems extraordinary that in such circumstances any traffic can be kept moving at all. Official figures show that the British Railway Administration has got about half the pre-war total of locomotives to work again, and some two-thirds of the employees. Most lines, including the many metre-gauge ones, have a train service of a sort, though on the main lines the few passenger trains are crammed to the doors of their windowless carriages or vans. Rail travel in Germany for the German must be an ordeal today.

Journeys by diesel railcar, recently restored for the benefit of the occupying forces, provide travel de luxe in Germany today. The "Fliegende Kölner" traverses part of its old route, from Bad Oeynhausen to Cologne, taking the alternative route *via* Hagen three days a week. The "Fliegende Hamburger" takes a curious route from Altona to Bielefeld *via* Lüneburg and thence over a single-line branch from Celle to Hanover, where it reverses. Though the running average of something under 40 m.p.h. is hardly up to pre-war standards, it is the fastest means of surface transport in Germany today, and by far the most comfortable.

Of locomotive types the German austerity 2-10-0s, apparently of several designs, are ubiquitous on all lines and every kind of train. In the American Zone, south of Kassel, they have been seen hauling local trains over a single-line hill branch. The British trains are handled generally by Pacifics; other passenger trains by 2-10-0s or one of the many classes of 4-6-0 or 2-6-0. Numbers of powerful tank types are at work, including 0-10-0, 2-8-2, and 4-6-4.

Clasp Brakes

IT is now becoming much more generally recognised by railway operating departments, as well as by locomotive engineers, that where any intensive train service is concerned, it is just as important to save time between stops by providing for a high rate of deceleration as to save it by rapid acceleration. Acceleration is entirely limited by the adhesive weight on the driving wheels of the locomotive, whereas for braking purposes, virtually the whole weight of locomotive and train are available.

The amount of kinetic energy even in comparatively lightweight trains moving at high speed is enormous; and the principal means of its dissipation, to bring the train to rest, perforce must be the brake gear, unless (in electric stock) regenerative braking can be used. The efficiency of the brake equipment may be considered as the ratio of the total force tending to retard the train to the total pressure actually exerted on the piston in the brake cylinder. Such a ratio naturally embraces all the forces which come into play between the brake cylinder and the tyre to which the brake blocks are applied, and is dependent also on the proportions of the brake rigging, the type of brake blocks in use, and on the coefficient of friction between brake block and wheel tyre.

The maximum practicable pressure which can be allowed at present between the brake block and the tyre is around 400 lb. per sq. in. For a brake block of average surface area, this means that the maximum force which can thus be transmitted is about 18,000 lb. The single-block design therefore is severely limited by this factor, and except on the score of simplicity alone, it is rather remarkable that it has survived so widely and so long. The alternative is the clasp brake, involving two brake blocks per wheel, arranged if possible at opposite ends of a diameter. Clasp brakes are not only more efficient than the single-brake block apparatus; they must be regarded as essential for all high-speed services.

With clasp brakes the pressure per brake block is halved, and the rate of renewal, and hence all maintenance costs, is proportionately reduced. Due to the lower pressures secured by clasp brakes, the temperature attained during a stop is also reduced, as the arrangement offers twice the area for the dissipation of the heat generated. In intensive passenger train operation these considerations are of great importance, as every effort should be made to prevent warping of the brake blocks and damage to the tyre surface. Cases are on record in the U.S.A. of brake block wear amounting to as much as $\frac{1}{8}$ in. to $\frac{1}{4}$ in. during a single stop, and of brake blocks in consequence being completely worn out between terminals. In this connection, the coefficient of friction varies between wide limits, even during a single stop, although the variations admittedly show fairly well-defined characteristics, so that a reasonably close estimate of the retardation can be made, provided that the brake cylinder pressure remains fairly constant. It has been found that the use of two brake blocks per wheel, as in clasp brakes, results in a higher coefficient of friction and consequently lower rate of wear per unit of energy dissipated. The durability of clasp brake blocks has been shown, by observations in America, to be increased to as much as 40 per cent. above the life of "single" blocks.

The notion of clasp brakes is by no means new. Perhaps the neatest arrangement ever devised was that due to W. Stroudley, who developed such a type of brake gear about 1880, shortly after the London, Brighton & South Coast Railway had decided to fit its locomotives with the Westinghouse brake. In effect, each coupled wheel was provided with its own brake cylinder, cast integrally with the hanger at the lower extremity, and on the admission of compressed air to the cylinder, the piston working therein pulled one brake block on to the tyre, whilst the pressure reaction on the "cylinder" cover thrust the other brake block (at the other side of the wheel) in the opposite direction. Thus both brake blocks were applied simultaneously on each wheel. Other railways, notably the North Eastern, used clasp brakes to a considerable extent, and they were also used by the former Midland Railway and perpetuated by the L.M.S.R. in the long series of 4-4-0 compound locomotives built between 1902 and 1924. There was, however, no general tendency, even during the speeding-up of main-line passenger services during the 1930s, to take advantage of clasp brakes; locomotives were still designed on the dangerous supposition that

they were only to move and not to stop, with the result that the brake gear in many types was slung on as an after-thought, instead of being the subject of especial attention by the designer. In most designs, indeed, the spacing of the wheels precluded the use of clasp brakes even if at a later date it had been decided to fit them.

Recently, however, it would seem that this matter is being given the attention it deserves, for in Mr. Bulleid's 4-6-2s on the Southern Railway, clasp brakes are one of the many striking features of these impressive locomotives. We have heard it said that in this case the design of the brake gear was one of the hardest problems to be solved in the drawing office, but the fact that it has been successfully achieved is not only a tribute to Mr. Bulleid's staff, but an acknowledgment of the importance attached to its provision on these locomotives, when the ordinary single-block gear could have been fitted with so much less trouble. Another very interesting example of modern clasp brake design is to be seen on the "CC.1" electric locomotive, and here again Mr. Bulleid, who was responsible for the mechanical part of the design, is to be congratulated on a remarkable achievement, for in this case every wheel in the two six-wheel bogies carrying the engine is provided with clasp brakes.

San Francisco—New York

(From a Correspondent)

IT is not often one feels the achievement of a lifelong ambition has been fulfilled. Waiting at Oakland Pier Station, California, to board a train for New York, on being repatriated from the Far East, I felt I had done so. Hauling our kit down the canvas-curtained aisles, I had no difficulty in identifying the layout of the Pullman sleeper from various film-going excursions. Seldom, I reflected, had British troops travelled in such luxury, with made-up beds, and coloured porters hovering in attendance.

We left Oakland about 10 p.m. on Thursday night with seven Pullmans and two baggage vans behind a Southern Pacific 4-6-2. I rode on the rear platform with the brakeman, and watched from this unaccustomed position the, to my upbringing on British methods, incomprehensible operation of American trains. Automatic semaphores were spaced every mile or so at which, if in the "on" position, the train merely halted before drawing forward at a walking pace. Every time it slowed, the brakeman dropped a lighted fusee on the track to warn the following train, of which the headlight was plainly visible some miles down the dead straight. When we stopped he descended on to the track and plodded back down it until recalled by a mournful hoot from the locomotive. Train orders were picked up in light cane loops stuck in posts by the lineside.

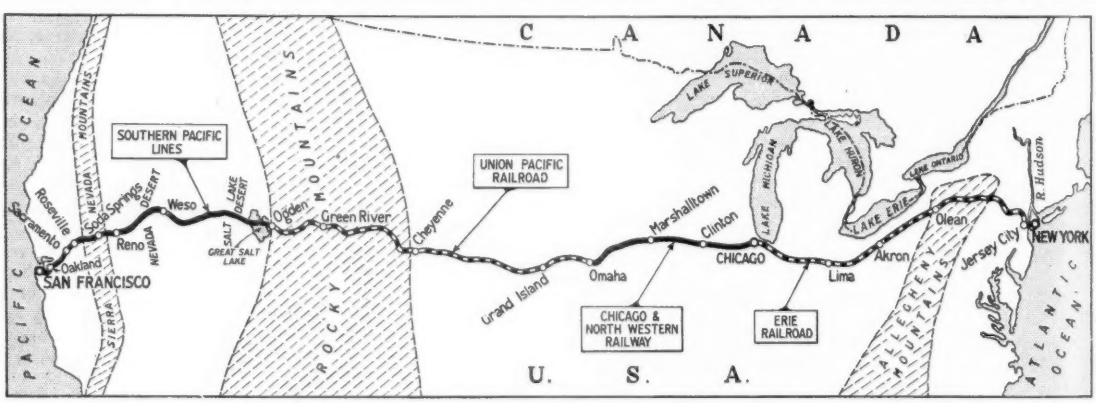
And so at 1 a.m. we ran into Sacramento, where seven cars of troops were added, and our train must have weighed a full 1,100 tons; at Roseville, 18 miles beyond, engines were changed and a huge ungainly 4-8-8-2 S.P. Mallet backed on, and off we set up the Sierra Nevada Mountains, the oil-burning locomotive towing its tender behind the chimney. Daylight found the train winding through the seemingly endless snowsheds near the summit of the Sierras at Soda Springs. In the infrequent gaps, glimpses of vast snow-covered peaks and pine-wooded slopes could be caught, and soon we were running down through open country past Reno to Sparks, where the Mallet was changed for an oil-burning 4-8-4, and two diners, a welcome addition, were added to the colossal train.

All day we ran through the Nevada Desert. At noon we joined the Western Pacific line at Weso, and from here all eastbound trains use that company's single track, and all westbound, the Southern Pacific. Westbound freights, hauled by S.P. 4-8-8-2s and 2-10-4s, could be seen on the track about a mile or so distant. Unfortunately it grew dark before we reached the Great Salt Lake and its famous trestle, and we arrived at Ogden at 10.50 p.m., immediately putting our watches on to 11.50 p.m. I thought I had already seen some big engines, but I just stood and gaped at the vast bulk of the "800" class Union Pacific 4-8-4 standing on the next track, with its 14-wheel tender in which a King Arthur, tender and all, could be submerged. The driver, seeing my astonishment, told me I had seen nothing yet, until our engine appeared. I had not. It was one of the "3990" class of 4-8-8-4 Mallets, one of the "Big Boys." It certainly looked the world's largest locomotive. It fairly hurled the train up the slopes of the Rockies, with a lack of effort that hid the great weight of the train.

Daylight on Saturday found us at Green River, Wyoming, where a similar locomotive took us forward over the open expanses of prairie. I formed a mutual admiration society with one driver, lately released from the Army, who had handled "Schools" locos, and that part of Wyoming resounded with their praises. At each division point a swarm of fitters descended on the locomotive and serviced it while it took water. Speed, often in the "fifties," seemed remarkably high for an articulated locomotive. Freight traffic was extensive, and 100-odd bogie car trains were frequently met, mostly with 4-8-8-4 Mallets, which seemed to tackle the long and heavy gradients effortlessly with their 3,000-ton loads.

From Cheyenne, after re-marshalling, we were taken forward to Omaha behind No. 7001, a U.P. 4-8-2, with a load of 16 cars and 2 vans. Here a C. & N.W. 4-8-4, No. 3011, worked the train through to Chicago, where we arrived at 5.45 p.m. At Boone, a water stop, I saw a large diesel-electric locomotive for the first time, a 5,400-h.p. type of four units, passing through on a 120-wagon freight and with a penetrating roar that seemed louder than that of any steam locomotive. We ran into Madison Street Station at Chicago, where on adjacent tracks were the diesel-powered streamliners "City of Denver" and "City of Los Angeles," and from there were taken through a maze of tracks to the Erie yards behind a 0-6-0 "switcher." We were hauled all the way to Jersey City by a series of Erie 4-6-2 and 2-6-4 types.

Scenically much of this run is interesting, as the line runs along a series of well-wooded river valleys in Southern New York and Northern Pennsylvania, sometimes along by the rivers and sometimes high up the valley sides, crossing tributary valleys on lofty viaducts. We finally reached the terminal at Jersey City at 1 a.m. on Tuesday morning after a most interesting and instructive trip.



Route of a trans-continental journey in the U.S.A., showing lines of the four systems used

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Largest Turntable in the World?

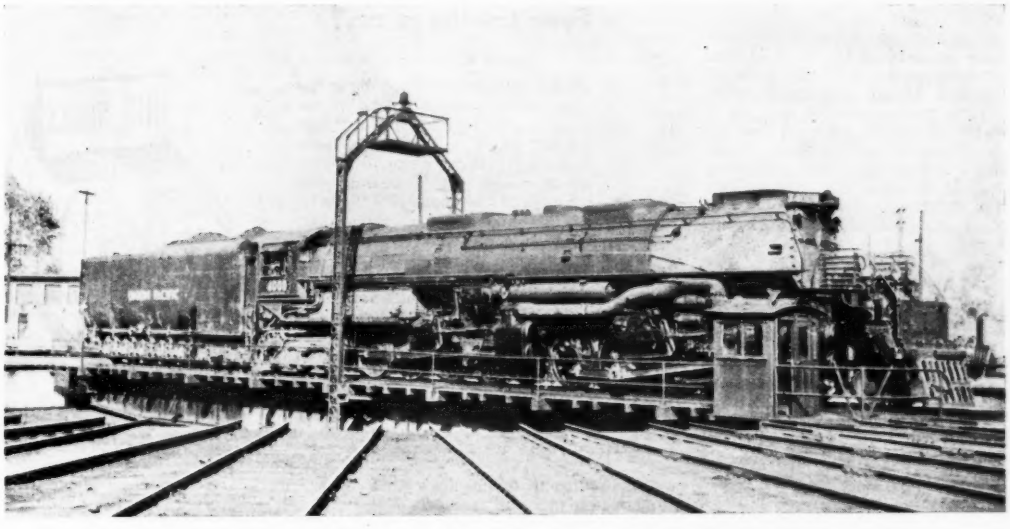
2 Atjehstraat 34,
Amsterdam-Oost, Holland. April 29

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the issue of April 19, page 422, you wrote about 120-ft. turntables in the U.S.A. You stated that the series "4000" Mallets of the Union Pacific, the so-called "Big Boys," had a wheelbase which allowed them to be turned on a 120-ft. table. Their wheelbase being 117 ft. 7 in., it is certainly possible to turn them on such a turntable, but there is only 2 ft. 5 in. left, which requires very careful braking of the locomotive being placed on the turntable. Besides, the total length of the unit over couplers is 133 ft., so that a considerable length extends beyond the turning circle. This may cause accidents when turning by hurting men or touching other locomotives, waiting for a turn.

For these reasons the Union Pacific has built new 135-ft. turntables both at Ogden and Green River (the terminals of the district served by the "Big Boys"). As far as I know these turntables are the largest in the world. I am enclosing a photograph supplied by the Union Pacific of one of these locomotives on such a turntable.

Very truly yours,
ALBERT G. NYMEYER,
Railway Engineer



Turning a Union Pacific "Big Boy" locomotive on a 135-ft. turntable

Diesel-Electric Locomotive Power

London. April 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am glad that an editorial in your April 26 issue keeps the subject of the diesel-electric locomotive to the fore-front, but, as you recently permitted me to point out, this new form of power is being used extensively for long-distance freight working on American railways. In passenger service the U.S.A. railways use the diesel-electric locomotive on popular routes which give it every chance to produce good results. In freight service the new engine has been installed deliberately on sections of line where the going was too hard for powerful steam locomotives because of heavy loads, steep gradients, rough climatic conditions, and, in some cases, scarcity of water. The alternative would have been to electrify these sections, but every American mail brings fresh evidence that diesel-electric power has supplanted electrification for the purpose of improving freight operations in difficult country.

You wonder which of our own railways will be the first to introduce a diesel-electric express locomotive. A piece of enterprise lies ready to hand. Why should the railways not join a large-scale experiment with diesel-electrics on the Manchester and Sheffield line of the L.N.E.R.? That stretch of railway would furnish a fine test of the capabilities of these locomotives for handling an intensive passenger and freight traffic. The electrification scheme approved by the Government before the war could be left in abeyance with advantage until diesel-electric power has had a thorough trial. The matter seems to be of sufficient importance to merit the attention of the Ministry of Transport.

Yours faithfully,
DUNELMIAN

South African Railways' Mission

South Africa House,
Trafalgar Square,
London, W.C.2. May 7

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Before leaving for America today, Mr. D. H. C. du Plessis, the Head of the South African Railways Mission which has just completed its investigations in the United Kingdom, asked me to secure your co-operation in conveying to the British railway officials concerned, the sincere thanks of all members of his group for the whole-hearted manner in which they were assisted throughout their stay.

You are aware, of course, that the members of the Mission spent, altogether, two months in Great Britain and, after consultations and investigations extending over three weeks in the London area, carried out a most intensive tour through the Provinces. During this period they conducted a detailed inquiry into all phases of railway practice, studied harbour operations and visited the works of industrial undertakings manufacturing equipment for railway purposes.

The entire investigation was carried through without a hitch, due primarily to the wonderful co-operation and assistance of the British railway companies, and, although letters of thanks have been addressed to the General Managers in this connection, it is the wish of all members of the Mission to record their very great appreciation of the personal interest taken in their tour by the railway staffs, and the unstinted assistance given under the difficult conditions obtaining at the present time.

It would be appreciated, therefore, if this expression of thanks and goodwill to their fellow-railwaymen in this country could be conveyed in some form through the medium of *The Railway Gazette*.

Yours sincerely,
J. R. NAISBY,
Director, Publicity and Travel Bureau

RESTORATION OF T.P.Os.—On the night of May 6-7 services were resumed between Bristol and Newcastle; Bristol and Camarthen; London, York, and Edinburgh; Edinburgh and York; and Newcastle and London. This will lead to improved postal services in Eastern Scotland and South-Eastern Scotland below Edinburgh, North-Eastern counties of England, Southern and Eastern countries, West of England, and South Wales. The restoration of these T.P.Os. has been made possible by the co-operation of the railway companies, which in some cases have appreciably speeded up trains to meet Post Office requirements.

The Scrap Heap

Off to India by Crocodile

Sixty railway wagon frames have started their journey from Gloucester to India on 15 G.W.R. "crocodile" wagons. They are part of a consignment of 1,250 and will be shipped from the Royal Albert Dock.

* * *

Not a Minute to Spare

As from May 1 all clocks of the L.M.S.R. and L.N.E.R. have shown the correct time. Hitherto it had been the practice on both railways to maintain their clocks outside stations a minute or two fast, whereas those inside were kept at the right time; the object was to hasten the tardy traveller and so assist in the punctual despatch of trains. Under the new arrangement the practice of the L.M.S.R. and L.N.E.R. becomes uniform with that of the other railways and London Transport.

* * *

Shorter Hours and More Output

The 11,000 workers of Vauxhall Motors Limited are now working a 5-day week of 42½ hr. instead of the previous 46½-hr. week. Workers and management, acting as a team, have planned the 5-day week through Vauxhall's Management Advisory Committee, and the management is increasing basic rates and bonus so that pay packets will be the same. At the close of first 5-day week it was announced that, while it is too early to draw positive conclusions, production had increased by 12 per cent. over the previous best post-war week.

* * *

Operating Odes

Introducing Train Control by Graph

The new controller scratched his head:
From what he'd seen in books he'd read
He knew that graphs in high regard
Had superseded board and card.
(Red lines, yellow lines, green lines, brown,
Through lines, branch lines, up lines, down.)

To make his mark with powers that be
He thought it obvious that he
Should start this system in his turn
As soon as all his men could learn
Red lines, yellow lines, green lines, brown,
Through lines, branch lines, up lines, down.

With overtime and common sense
He'd teach the men with small expense
Then start the graphing privily
And then produce, *fait accompli.*
Red lines, yellow lines, green lines, brown,
Through lines, branch lines, up lines, down.

With sweat, and tears, and almost blood
He toiled until they understood
That colours represented speeds
And that controlling only needs
Red lines, yellow lines, green lines, brown,
Through lines, branch lines, up lines, down.

And then, completely satisfied,
He thought them ready to be tried.
The first day's graphs he viewed with awe
For covering walls and desks he saw
Red lines, yellow lines, green lines, brown,
Through lines, branch lines, up lines, down.

Printed lines, straight lines, crooked lines, tick,
Dotted lines, dashed lines, thin lines, thick,
Single lines, double lines, stop lines, go,
Engine lines, goods lines, fast lines, slow,
Pencil lines, pen lines, black lines, blue,
Main lines, loop lines, and hard lines, too.

H.W.W.

Railway Breakfast

I travel each day to a neighbouring large town for business reasons and by leaving early I am able to enjoy a good breakfast in the station dining-room. This morning the menu was: cereal, bacon and sausage, with toast, butter, and jam. The expense was a problem, but now I find that by leaving early I can get a workman's ticket and save sufficient in this way to get my breakfast for 1s. 1½d. It is high time the Minister of Food put a stop to my flagrant evading of his food regulations.—*"H. F." in a letter in "The Times."*

It is not an infringement of any food regulation to eat breakfast in a railway station restaurant or in any other communal eating place. Passengers will, however, do well to bear in mind that supplies are restricted and that only a limited number of guests can be accommodated at each meal.—*Mr. G. E. Orton, Chief Officer for Public Relations, G.W.R., in a letter in "The Times."*

* * *

100 YEARS AGO

From The Railway Times, *May* 9, 1846

RAILWAY ECCENTRICS.

Almost ready, price 3d., with a Coloured Map,

INCONSISTENCIES of MEN of GENIUS Exemplified in the Practice and Precepts of Isambard Kindom Brunel, Esq., and the Theoretical Opinions of Charles A'exander Saunders, Esq., Secretary of the Great Western Railway, Advocates of a Break of Gauge.

THE ARGUMENT.

PART I.—Shows how Mr. Brunel, in 1838, persuaded the Directors of the Great Western Railway to adopt the Broad Gauge, assuring them that this railway would have "no connection with any other of the main lines;" and how, in 1845, he attempted to force a connection between it and the main lines at Wolverhampton, Rugby, Dorchester, &c.—How Mr. Brunel stated that carriages and trucks would not pass from one railway to another, being different properties, whereas more than half a million are passing annually at the present time.—How Mr. Brunel, in 1838, adopted the broad gauge, for the express reason that the railway would be nearly level, and have very slight curves, and how, in after years, he applied the broad gauge to railways having the steepest gradients, and the sharpest curves.—How Mr. Brunel said, in 1839, that "he never recommended the broad gauge for the purpose of having larger engines; and how, in 1845, it was his boast that he was building engines wider and larger."—How Mr. Brunell selected the broad gauge because he could place the bodies of the carriages within the wheels, and how he has always brought them outside the wheels.—How Mr. Brunel advocates the atmospheric system, which in all essential points is the exact converse of the broad gauge system.

PART II.—Shows what Mr. Saunders thought of competition in 1844, when he was a disinterested party, and what he said about competition, when he was an interested party.

John Ollivier, 59, Pall Mall.

Fines Cost More than Fares

Compared with pre-war years, there is a big increase in the number of passengers found to be travelling fraudulently. One railway company alone—the L.N.E.R.—has successfully brought 168 prosecutions before the magistrates at the Guildhall in London so far this year, and fines totalling nearly £500 have been imposed. Very few of the offenders are found to have been forced to adopt fraudulent methods because of lack of means to make a journey; some explain that it is the first time they have ever done such a thing; others exhibit a desire to prove their cleverness.

Personal Questions

Ever try these on?

To put ourselves occasionally in the other fellow's shoes is one of the most interesting and fruitful things we can do. With your fellow railroaders, it makes for smooth, pleasant teamwork. And in dealing with shippers or passengers, it's the very starting point for good public relations. If a patron seems irritated, impatient or unreasonable . . . put yourself in his shoes. Try to see his point of view, and you'll find yourself more than half way toward the goal of clearing up the difficulty . . . turning a possible knocker into a friend of yours and your Railroad.

[From "Company Manners" issued by the New York Central System

* * *

"My predecessors may have known all about huntin' and shootin', but I know all about hootin' and shuntin'."—*Sir Frederick Burrows, Governor of Bengal (at one time an engine driver).*

* * *

"Why am I reading my paper upside down? If you MUST know, I keep a bookstall."

[Reproduced by permission of the proprietors of "Punch"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

State Railways Earnings

The total approximate gross earnings of all Budget Lines from April 1, 1945, to March 31, 1946, amount to Rs. 219·91 crores, which is 2·56 crores more than the actuals for last year and 4·93 crores less than the revised Budget Estimate. The total approximate ordinary working expenses, including suspense, but excluding appropriation to and from the depreciation reserve fund, of Budget Lines up to the end of January, 1946, were Rs. 97·54 crores, that is 15·54 crores more than the corresponding period of last year, and 25·12 crores less than the revised Budget proportion.

G.I.P.R. Coach Fire

A fire broke out and destroyed one upper class coach of 35 down Madras express between Dhond and Kurdwadi on the night of April 2. The charred remains of a body were found in the burnt-out coach. The Government Inspector of Railways is holding an inquiry into the cause of the accident.

Collision at Itwari

When entering Itwari, a suburb of Nagpur, on April 10, 13 down Nagpur—Howrah passenger collided with 12 up Howrah—Nagpur passenger. Both engines and the two leading coaches of 12 up were damaged. Forty passengers and members of the train crews were slightly injured, and three passengers were admitted to Mayo Hospital, Nagpur, for treatment.

SOUTH AFRICA

January Financial Results

The result of working the railways, harbours, steamships, airways and aerodromes in January, 1946, was a surplus of £58,423, as compared with a surplus of £252,784 in January last year. Revenue increased by £131,933 over the corresponding month of last year. The principal sources of revenue were passenger, parcels, and coal traffic; catering and bedding, road motor and airways services. Expenditure, on the other hand, advanced by £326,294, on account of greater maintenance and operating costs, and cost of living allowance payments.

The accumulated deficit for the ten months April, 1945, to January, 1946, was £1,262,313, which compares adversely to the extent of £1,455,807 with the surplus of £193,494 obtained during the corresponding period of the previous financial year.

Additional Estimates

In moving the committee stage of the Bill on the estimates of additional expenditure to be defrayed from railways and harbours funds, and on the estimates of additional expenditure on capital and betterment works during the year ending March 31, 1946, the Minister of Transport, Mr. F. C. Sturrock, said that the bulk of the amounts asked for arose from the considerable increase in traffic during the year and the increase in expenditure, which had been rather more than revenue. In addition, cost of living allowances had been on a higher level than estimated, and there had been a considerable increase in the cost of materials purchased.

The war had still been in progress when the last budget had been prepared, and at that time the Government had been in the dark about air services. During the year these services had been inaugurated, and expenditure had been considerably greater than estimated. It had not been offset by revenue. There was still a shortage of staff, and overtime payments had been high. The work on dry docks had been accelerated, and it had been possible to finish one and make considerable progress on the other. The result had been that more expenditure had fallen within the year than originally estimated.

There was a large programme of purchases, something like 400 engines, 210 motor coaches, 1,400 passenger coaches, a number of wagons, and many other things. As far as purchases represented renewals, the money would come out of the renewals fund. Where they represented new works, the money would come out of the capital and betterment fund. The Union Government had not entered into any commitment with the British Admiralty for the Cape Town dock. The cost to the Union of both the Cape Town and East London docks was approximately £1,000,000. The Administration would not be laying down any more airports, but it would tar the runways on the stations at Kimberley, Bloemfontein, and elsewhere, so that they could be used by heavier machines. Apart from that, no more work would be done on airfields.

EGYPT

Renewal of Rolling Stock and Equipment

On March 26, the Egyptian Senate approved a report from the Finance Committee on a proposed credit of £E.4,000,000 for renewal of rolling stock and equipment for the Egyptian State Railways.

Air-Conditioned Coaches

Four air-conditioned luxury coaches for the Egyptian State Railways were ordered from the Metropolitan-Cammell Carriage & Wagon Co. Ltd. before the war. One of these was shipped, but the remainder could not be sent out on account of lack of shipping space. These were accordingly stored near Preston throughout the war. They were recently sent back to the builder, and have now been shipped to Egypt. The coaches are provided with Stone's air-conditioning equipment. At the same time as the original order was placed, four similar coaches were ordered from a Belgian firm, but these have not yet been built.

Sidi Bishr Interlocking

Sidi Bishr Station, on the Abi Qir line, which is now being remodelled and interlocked, is 11.88 km. from Alexandria, and not 880 km. as stated in *The Railway Gazette* of March 22.

UNITED STATES

"Twentieth Century" on Peacetime Schedule

The New York Central "Twentieth Century Limited" returned to its peacetime schedule of 16 hr. between New York and Chicago on April 28, a cut of 1 hr. on its previous timing. Other principal New York—Chicago trains of the N.Y.C. had their timings reduced from 18 hr. to 17 hr. on the same date.

New Transcontinental Sleeping Cars

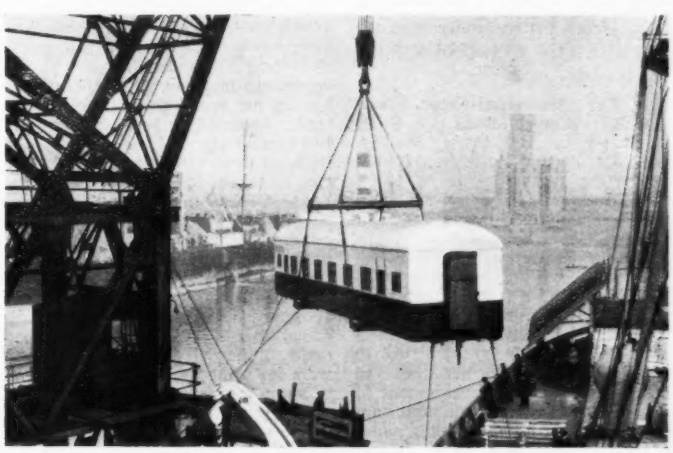
On June 2 the Southern Pacific will establish coast-to-coast through Pullman sleeping car service between Los Angeles, San Francisco, and New York. The Pullmans will be operated on the "Golden State Limited" from Los Angeles in connection with the Rock Island, and from San Francisco in connection with the Union Pacific and the Chicago & North Western; and with trains of eastern lines between Chicago and New York.

The schedules of the "Overland Limited" and "Golden State Limited" expresses, operating without extra fare, will be cut to approximately 48 hr. on June 2, which will make it possible to provide the through coast-to-coast Pullman service on a basis convenient to the public. This service is an addition to the coast-to-coast sleeping cars introduced on March 31, as reported in *The Railway Gazette* of May 3.

WESTERN AUSTRALIA

War Work at Midland Junction

The first full survey of important war work carried out at the Midland Junction railway workshops has been issued by the Western Australian Government Railways. The railway workshops constitute the largest engineering establishment in the State. The relative isolation of Western Australia, combined with the necessity of avoiding delays and expense attendant on importation, tended to make this section of the railways more than ordinarily self-



Air-conditioned coaches for the Egyptian State Railways being loaded at Liverpool. (*See paragraph on this page*)

sufficient. The habit of self-reliance and willingness to tackle any job proved of inestimable value during the war years, when a great variety of work was done for the services and various Commonwealth departments.

Originally intended for the maintenance of locomotives and rolling stock, the workshops had long been in use in a much wider sphere. Local design and manufacture of locomotives, carriages and wagons had become a normal function; with the exceptions of steel plates, rolled sections, and two proprietary fittings, every part needed for the building of railway engines and rolling stock was produced.

Much work for maintenance of the main propelling machinery of State-owned vessels was carried out. This included the complete manufacture of large diesel engine cylinders, cylinder heads, pistons and valves, as well as extensive crankshaft repairs. Two bronze propellers were also made for the State motor vessels *Kybra* and *Koolinda*. The Commonwealth did not supply any machines or plant for use in the general shops, where the bulk of the work was done; the only Commonwealth-owned machines at Midland Junction were in the 25-pounder shell annexe and in the tool room engaged on 0.303 ammunition tooling.

Early Army Orders

The first order for war manufacture was received from the Department of the Army on October 18, 1939, as a result of public tender, and covered supply of 9,676 items in 38 categories for howitzer carriages, totalling £1,715. Although this order was small in comparison with others which came later, it had the effect of bringing the works into active participation in the war equipment effort almost from the beginning of hostilities. At that time the great development of war manufactures under the Ministry of Munitions was not foreseen. Growth of war production at Midland Junction was very slow at first, but in due course the plant and staff were taxed to the limit.

A tremendous burden was thrown on the railways during the war, and this naturally increased the demand for maintenance. It could be argued that the Midland Junction works would have made a substantial contribution to the war effort if they had been devoted only to intensive construction and maintenance of locomotives and rolling stock to improve transport, but this restriction was not even contemplated. Maintenance was allowed to recede considerably, although it was known that this meant piling up an enormous post-war job.

Contracts allotted from Melbourne included an order for the main propelling machinery for Australian minesweeping vessels. Each set of machinery included two triple-expansion steam engines, each of 775 h.p., together with thrust shafts, stern tubes, and other parts.

Engines for Navy

Other orders for main propelling machinery embodying 1,000-h.p. engines followed, and eventually 10 vessels of the Royal Australian Navy were equipped with engines built at Midland Junction. Expanding from these orders came a long and heavy succession of ship propellers in bronze. Not all of these were small, and six of the standard merchant ships now have propellers nearly 18 ft. dia. made at Midland Junction.

Shell Production

When the Ministry of Munitions was set up, it was agreed that the Midland Junction works would be the best location for a shell annexe, although no roofed space was then available. Plans for shop extension to increase capacity for railway work had been drawn before the war, but deferred for lack of funds. Equipment of the annexe presented severe problems as no machines were available, and could not be made in other places in the time required. To meet this position, manufacture of the special-purpose machines was undertaken at the works with great success, and an annexe with a capacity to produce 20,000 25-pounder shells a week was brought into being.

Ammunition Tool Room

When the establishment of a .303 ammunition factory at Welshpool was decided on, special arrangements to meet the demand for production tools had to be made. This need was met by the erection and equipment of a tool-room in the Midland Junction works. The Railway Department made generous contributions towards the equipment of the tool-room, for it was intended from the outset that this establishment should become the post-war centre for tools and gauges in Western Australia. Electric heat-treatment furnaces and an accurate measuring machine, together with the building itself, were the work of the railways. The tool-room achieved a high standard of work and was a large factor in the successful operations at Welshpool.

Publications Received

The Machining of Steel. By F. C. Lea and Eric N. Simons. London: Blackie & Son Ltd., Chandos Place, Covent Garden, W.C.2. 7¼ in. × 5 in. 214 pp. Illustrated. Price 8s. net.—In this useful handbook the authors present the fundamental principles of the machining of steel clearly and simply in an endeavour to meet the needs of the practising machinist and the student. Here will be found, illustrated by sketches and diagrams, descriptions of lathes, planers, milling machines, etc., an outline of the principles of steel cutting, details of various tools, and notes on special machining operations. A careful study of these pages should enable the operator to secure better results from the machines in his care and the tools he uses.

Beiträge Zur Schweizerischen Eisenbahngeschichte (Contributions to Swiss Railway History). By Ernst Mathys, Librarian, Swiss Federal Railways. Berne: Published by the author. 8¼ in. × 5¾ in. 176 pp. Illustrated. Paper covers. No price stated.—Encouraged by the excellent reception of his work entitled "A Century of Railways in Switzerland: 1841-1941," the author, who is librarian to the Swiss Federal Railways and a frequent contributor to the official bulletin, has brought together in this well-illustrated volume a number of additional facts calculated to add to the interest of his earlier work and shed further light on the development of a system which forms such an important link in the European railway routes, and is notable for the skill with which it was built and has been constantly developed and improved. The present work collates a number of the most important facts relating to the origin and construction of the Gothard, Simplon and Lötschberg routes; much interesting information is given regarding the personalities who played a part in the efforts made to finance those undertakings and secure favour for them against rival proposals. The early years during which the advocates of railways had to combat great opposition also are touched on, and tables are given covering the origin, life, and ownership of the numerous railway companies, as well as the process by which the Federal system has been built up, very useful for reference. There are also chapters on the gauge question, the origin of left-hand running in Switzerland, and the operation of trains at night—long objected to by the managements—the method of train numbering and some other details. It was long believed, erroneously, that there had once been some broad gauge track in Switzerland, apparently because the German Baden railways had the 5 ft. 3 in. gauge from 1840 to 1855, and locomotives for the Zurich-Baden (Switzerland) line were built at Karlsruhe. The left-hand running came, of course, from copying English railway methods, as it did in several Continental countries, and although it was once seriously proposed to change to right-hand working, the practice originally adopted has been retained. The objections raised to the introduction of night trains make somewhat curious reading. They were for some time successful and resulted in many journeys taking longer by railway than by the older road coach facilities. To those readers, and they are many, to whom the Swiss railway system presents its own special attraction, this book will be particularly welcome as containing a wealth of information in handy compass, clearly and interestingly presented.

Standard Specifications for Aluminium and Aluminium Alloys. By the British Aluminium Co. Ltd., Salisbury House, London Wall, E.C.2. 7 in. × 9 in., 39 pp. —Many specifications covering aluminium and its alloys have been issued in recent years, and all the current specifications issued by the British Standards Institution and Government Departments have been assembled in this publication, which provides a concise record for reference. Among the specifications included are the B.S.I. Aircraft Specifications and the B.S.I. General Engineering Specifications, the D.T.D. Specifications and the BS/STA 7 Schedule, and the L.A.C. Series compiled by the Light Metals Control which covers the use of secondary casting alloys.

A Civil Air Line at War.—We have received from the B.O.A.C. an attractive booklet which describes and illustrates the activities of the corporation during the war. It will be recalled that, from the date of its birth in April, 1940, the B.O.A.C. was brought into Government service, and some idea of the extent of its operations can be gathered from the fact that by the time the war ended in Europe its aircraft had flown over 57,000,000 miles on transport work and had carried nearly 50,040,000 lb. of mails and cargo. This booklet tells a romantic story, for in its pages we visit the Western Desert and the countries of the Middle East, West Africa and Southern Arabia, India, and take hazardous trips over the countries of enemy occupied Europe. It tells a story which for daring and skill is without parallel in civil aviation.

Coal and Its Post-War Carriage on British Railways*

Mr. H. Kelway-Bamber's suggestions for larger-capacity wagons

PROGRESS in the output of coal in Great Britain, during the sixty years 1853-1913, was fairly regular, commencing with 70 million tons and reaching a peak of 287 million tons in the latter year. Output during the next 30 years fell from 266 million tons in 1914 to 193 in 1944. For 1945 the output has been estimated at about 180 million tons, a reduction of 107 million tons (33 per cent.) on that for 1913.

Under pre-war conditions (1913) an annual output of some 300 million tons was only just sufficient for demands which will no doubt increase when work returns to normal throughout the country. During 1913 some 94 million tons were exported, approximately 33 per cent. of the output for that year. Ten years later, exports still amounted to 98 million tons, or just over 35 per cent. of the output (276 million tons). From that time, both output and export fell, until in 1945, the former was, as stated, only 180 million tons, and exports had practically ceased.

Distribution

The quantity of coal for home consumption during 1914-1943 remained practically constant, at about 190 million tons a year, its distribution (in millions of tons) being approximately as follows: :—

Gas works ...	21·0	Other industries...	26·8
Electricity ...	24·0	Non - industrial establishments...	3·4
Water works ...	0·4	Domestic	35·4
Railways	15·2	Miners' coal ...	4·6
Coke ovens ...	20·1	Coastwise bunkers	1·2
Collieries ...	11·1	Miscellaneous ...	7·4
Iron and steel ...	10·3		
Engineering industries	4·5	(Total 185·4)	

The weight of coal, coke, and patent fuel loaded into wagons on railways of the United Kingdom during the "peak output" year, 1913, was 227 million tons, or 82 per cent. of the tonnage raised, and involved a loading of 19 million wagons averaging 12 tons capacity.

For a projected colliery working year of 250 days, this represents an average daily loading of 760,000 wagons or 95,000 per hour for an 8-hour day.

The highest-capacity 4-wheel coal wagon in service on British railways is the 20-ton type built to Railway Clearing House specification. Such wagons would have dealt with the 227 million tons of rail-borne coal in 1913 in 11,350,000 loads, a reduction of 19,000,000 − 11,350,000 = 7,650,000 tons, or 40 per cent.

A large number of existing wagons is obsolete or uneconomical in service, and should be replaced, as rapidly as possible, by modern vehicles of the highest capacity.

The amalgamation of British railways (1923) into four main-line groups has resulted in greatly improved methods and economies, including a wholesale reduction in the number of types of locomotives, and their replacement by a much smaller number, each suited to its special service.

Coaching vehicles have been similarly standardised, but, so far, little has been done towards improvement of the general efficiency of coal-carrying wagons or to ensure a satisfactory use of the permanent way or of locomotive hauling power available.

This, so far as coal-carrying wagons is concerned, is largely due to the great number of privately-owned vehicles and opposition to any change of method or practice. Many attempts have been made to improve matters in this respect, and, to a limited extent, 20-ton self-discharging wagons have been in service in this country with eminently satisfactory results, but as recently as 1938 only 35,000 such wagons were in use, and not all for coal traffic.

For half a century, gross axle loadings of 16 tons have been generally used on the railways of India and South Africa, compared with 9.5 tons for fully-loaded 12-ton wagons, weighing 6.75 tons, in this country.

About 900,000 wagons (private or rail-owned) were allocated to the transport of coal in this country during 1913. Assuming that 7 per cent. (63,000) were under repair, some 817,000 remained available for traffic purposes. To carry the 19 million tons of rail-borne coal, each wagon of 12 tons average capacity would have been loaded 23 times during a working year of 250 days, or once every 11 days.

According to Ministry of Transport railway returns (1938) the average loaded-haul of coal-carrying wagons was about 45 miles, the yearly loaded mileage per wagon being (45 × 23) = 1,035. Adding an equal mileage for the return (empty) journey, the total mileage per wagon per annum was 2,070, an overall average daily run of 8 miles for a 250-day year.

This low wagon-mileage is largely the outcome of time wasted at destination, where vehicles, loaded and empty, frequently stand idle for long periods at receiving stations. It in no way reflects upon the work done by railway companies in hauling vehicles from and to collieries, but accentuates the urgent need for a complete revision of the relation of wagon-carrying capacity to gross weight hauled.

The weight and bulk figures of British coals varies, as shown below:—

Type of fuel	Wt. per cu. ft.	Cu. ft. per ton	Cu. ft. per 22 tons
Steam (colliery screened) :			
Cobbles	48·7	46	1,012
Nuts/beans	50·9	44	968
Large	50·9	44	
Peas	53·3	42	924
Colliery small	53·3	42	
Anthracite (colliery screened) :			
Cobbles	50·9	44	968
Large	52·1	43	946
Nuts/beans/peas ...	53·3	42	924
Rubbly culm	56·0	40	880
Patent fuels :			
Briquettes	62·2	36	792

Assuming a future standard 22-ton coal-carrying wagon, its cubic capacity must range between 1,012 cu. ft. for steam cobbles, and (excluding briquettes) 880 cu. ft. for rubbly culm anthracite.

The standard 20-ton mineral wagon (R.C.H. Drawing No. 1114C) designed 23 years ago, has an inside-body height of 5 ft. 2 in., an overall height from rail of 9 ft. 0⅝ in., and a cubic capacity of 882 cu. ft.

Increased to 6 ft. (10 ft. overall)—the standard for Indian and South African railway wagons—its cubic capacity would be 882 × 1.16 = 1,023 cu. ft., or sufficient for a "level-loading" of the lightest coal, steam cobbles.

The tare weight of 22-ton Indian broad-gauge railway, vacuum-braked, four-wheel wagons is 9.5 tons: self-discharging coal wagons for service on British railways could be built, complete with vacuum brakes, at a weight not exceeding 10 tons, the ratio load/tare-weight being 2.2/1.

Such wagons, measuring 24 ft. 6 in. overall, for a gross weight of 32 tons, would exert an average pressure of 1.265 tons on each foot of track occupied by the vehicles.

In the absence of automatic-discharge, a satisfactory return on capital expended on wagons, permanent way, locomotives and plant is impossible. Probably the acme of efficiency in this respect, within the limits of 16-ton gross axle-loadings, is that rendered on railways of the Union of South Africa (3 ft. 6 in. gauge) by 45-ton, 8-wheel bogie, self-discharging wagons in regular service there for the past 30 years.

The author has seen many hundred tons of coal automatically discharged from such vehicles in no longer time than was involved in transferring the locomotive from one end of the train to the other to take the empty wagons back to the collieries.

The static resistance of 32-ton 4-wheel wagons, equipped with 37 in. dia. wheels, 5½ in. dia. axle-journals, whitemetal-lined bearings, lubricated by mineral oils, is 800 lb., or about 25 lb. per ton.

A locomotive exerting a tractive force of 30,000 lb., therefore, would be able to start a close-coupled train composed of 37 such wagons, weighing in all about 1,200 tons, and carrying 814 tons of coal, for a tare weight of 390 tons, including the brake van, the ratio load/tare being 2.1/1.

A train composed of 37 such wagons, each 24 ft. 6 in. long, would have an overall length, less locomotive, of 806 ft., or, say, 830 ft. inclusive of brake van.

Similarly, a train of 68 12-ton wagons, each measuring 18 ft. overall, would have been 1,224 ft. long, or, say, 1,250 ft. including brake van, an increase of 420 ft. or nearly 50 per cent.

Self-Discharging Wagon

A 22-ton self-discharging coal wagon is accordingly suggested for use in this country. It is the 4-wheel equivalent of the 45-ton, 8-wheel wagons in extensive use in South Africa. In common with all self-discharging vehicles it:—

(*a*) Eliminates manual labour at place of discharge.

(*b*) Makes possible a full use of wagon capacities.

(*c*) Reduces length of permanent way and sidings occupied for given loads.

(*d*) Economises and makes proper use of locomotive tractive force.

(*e*) Greatly lessens the number of vehicles needed for overall duties, including shunting-coupling operations.

It is perhaps unfortunate that in the past the use of 8-wheel (bogie) wagons has not found favour in this country, though forming a great majority on the railways of many others. *The Times* in a leading article (March 27, 1946) entitled "Science in Industry" remarked:—"Tried traditions are generally adequate for an immediate purpose, but they are seldom sufficient for rapid developments

* "Coal and its Post-War Carriage on British Railways." Paper read by Mr. H. Kelway-Bamber, M.V.O., before the Institution of Locomotive Engineers on May 1

to meet new demands. . . ." How aptly these words apply to many present-day practices and point to the necessity for advance in every direction, if this country is to hold its own in the face of world-wide competition.

The Discussion

Mr. R. C. Lynes observed that in making suggestions of the kind outlined by the author, it was essential to bear in mind the conditions now obtaining. The wagon proposed by the author had a 12-ft. wheelbase, which was too long for general use; even 20-ton wagons which had a longer wheelbase than the 12-ton type were restricted in the routes over which they were permitted to run. Bottom discharge doors would necessitate conveyors or other suitable spillage facilities and suitable accessory plant. That was all very well for a few large central depots, but what about the numerous small depots, on which such an outlay of plant could not be contemplated? About 400 different grades of coal were transported at present. It would not be possible to provide sufficient hopper store for so many different varieties.

He agreed that many of the existing wagons were of obsolete types. Some had been running for 70 years. It was one thing to condemn them and quite another thing to secure their withdrawal, especially if they were privately owned. He did not see that the author's 22-ton wagon offered much advantage over the present 20-ton R.C.H. type, which, incidentally, was now upgraded to carry 21 tons. Why transport coal for domestic needs, anyway? It would be better to convert it locally at pitheads, or in a few large central stations, into gas or electric power and transmit it in those forms to consumers.

Mr. Duncan Bailey expressed his strong preference for steel instead of wooden wagons; the former carried a greater pay load for a smaller deadweight. He was strongly in favour of large-capacity wagons, even if only for certain classes of traffic, and instanced the big wagons engaged on the transport of limestone between Buxton and Windsor, which could be discharged in as little as 90 seconds. Except for the G.W.R., however, British railways offered no inducement to the use of large wagons, and he referred to the Samuel Commission Report of 1925, in which recommendations for such inducements were made.

Two reasons for the present low wagon-mileage mentioned by the author were: (1) The fact that coalowners and users took advantage of wagons as a means of cheap storage, saving them the cost of constructing bunkers, etc.; and (2) the immense delays occasioned to wagons awaiting discharge at ports, when ships were delayed at sea.

A favourable load/tare ratio was most important. He had designed a 16-ton steel wagon with a tare of only 6¼ tons, which gave an even better ratio than the author's. One should aim at getting the maximum load on a 9-ft. wheelbase; the author's proposed 12-ft. wheelbase was much too long.

The usual objections to steel wagons were 90 per cent. prejudice and 10 per cent. ignorance. It was absurd to speak of corrosion in connection with steel wagons. He instanced steel wagons 50 years old in which the underframes, though considerably exposed to the action of "coal water" (rain or other water which had seeped through the coal) were practically as good as new.

Mr. W. Cyril Williams gave examples of long-distance coal haulage in South Africa, for which 50-ton steel wagons, with vacuum and hand brakes, were used. He compared these with the equivalent trains which would be needed if 10-ton wagons were used. He thought that the root of the trouble did not lie within the railways themselves but in the present system of distribution, which promoted inefficient working and prevented the use of high-capacity wagons. That being so, the system itself would have to be altered, no matter how drastic the cure might be.

Mr. F. W. Sinclair remarked that the subject was at least 30 years old; and then, as now, one of the difficulties was the colliery screen facilities. The most advanced British practice today was probably that in the G.W.R. docks. The most common method of emptying wagons for that traffic was by end discharge doors, so the author's suggested hopper discharge would involve much alteration to existing dock-loading appliances.

He referred to the popularity of the 10-ton wagon with the small user. It allowed him to discharge the coal and get the wagon away within the day normally allowed before demurrage began to operate. Some most illuminating statistics were given in correspondence which originally appeared in *The Economist* and was reprinted in *The Railway Gazette* on p. 303 of the issue of March 15, 1946. In this, Mr. Roger Gibb stated that of 273,643 tons of goods carried in G.W.R. company's wagons in one week, 43.3 per cent. of the tonnage was in consignments of 20 tons and over, and 14.1 per cent. in consignments of 6-10 tons. In privately-owned wagons the percentage was 71.9 for consignments of 20 tons or more, and 17.7 per cent. was in consignments of 10-20 tons. There was thus a good case for high-capacity wagons in Great Britain.

Colonel Cantlie thought that a 20-ton four-wheel wagon gave a better load/tare ratio than two 10-ton four-wheel wagons; but over 30 tons capacity, a double-bogie design was better. He stressed the importance of the financial aspect. Private owners might take advantage of wagons for storage purposes, but could they afford this costly means of storage? Much capital was tied up in the wagons, and the amount would be even greater when all wagons had continuous brakes. If storage was a part of a wagon's duties, then the cheaper the wagon the better. He agreed with Mr. Cyril Williams that the cause of the difficulties encountered in trying to introduce large wagons lay in the present system of distribution.

Sir William Stanier said that the paper had been read to the wrong audience; it ought rather to have been presented to the Colliery Owners' Association. Railway engineers were quite capable of producing wagons for any requirements. One trouble was that there were too many grades of coal, necessitating complicated systems of yards and bunker storage. A change of heart was needed among those now carrying responsibility for the present systems, and the prospect of great capital outlay to remedy it would then have to be faced.

Eventually fully-braked trains and close couplings would have to come. He could not agree with Colonel Cantlie's figures for load/tare ratios. Two 20-ton four-wheel wagons gave a better load/tare ratio than one 40-ton double-bogie wagon. The latter type did not give better load/tare ratios until capacities of 50-60 tons were considered.

Mr. H. Holcroft referred to the rough handling received by wagons in traffic: spilling of the contents occurred even from vertical-sided wagons, due to buffing shocks, especially in hump sidings. He thought the author's proposed hopper wagon, with its sloping sides, would be troublesome in this respect. The author had given 25 lb. per ton as the starting resistance; actually this was a very variable factor, much affected by weather conditions and the type of axlebox and lubricant.

Mr. T. Henry Turner suggested that the British Coal Utilisation Research Association and representatives of the coal industry should be invited to join in a future discussion on the subject, to be arranged by the Institution. The vital factors were the methods of delivering and distributing the coal, not the actual design of the wagons for transporting it.

Mr. H. Kelway-Bamber, in reply, said that in India it had been found better to use two 22-ton four-wheel wagons than one 44-ton bogie wagon, so the former was standardised, and in addition all its component parts were standardised so that a great reduction in working expenses was secured, with greatly simplified store-keeping in connection with repairs. In presenting the paper he had shown a lantern slide to illustrate his suggested design. No handbrake was shown on the slide, but he had in fact intended the design to include a handbrake as well as the vacuum brake; the handbrake would be a necessity in any case. He felt well rewarded for presenting his brief paper by the good discussion it had elicited.

RETURN OF "CORONATION SCOT" COACHES FROM U.S.A.—After seven years in the United States, the L.M.S. eight-coach "Coronation Scot" train is to return to Great Britain this month. The train was shipped to the United States in 1939 for exhibition at the World's Fair in New York. The streamline *Coronation* locomotive was brought back to this country during the war, and has since been working main-line expresses from the Camden (London) depot, but war-time conditions made it impracticable for the carriages to be returned. They have, therefore, remained in the United States, where they were placed at the disposal of the military authorities. Illustrations of the train in use as living quarters for officers of the U.S. Army Quartermaster's Corps, at Jeffersonville, Indiana, were reproduced in our August 20, 1943, issue. Arrangements have now been made for the eight passenger carriages to be shipped on or about May 10 from Baltimore, Md., to Liverpool. On arrival in this country they will be sent to one of the L.M.S.R. carriage works for overhaul before being put back into ordinary passenger service, when they will afford a useful contribution towards alleviating the shortage of main-line coaching stock.

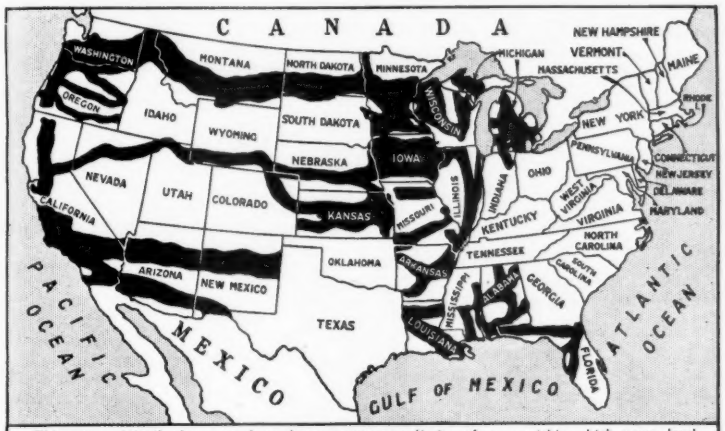
EUROPEAN TRANSPORT ORGANISATION.—A public lecture on "The Organisation and Control of European Inland Transport" will be given at the London School of Economics, Houghton Street, Aldwych, London, W.C.2, on May 30, at 4.45 p.m., by Professor E. R. Hondelink, Director-General of the European Central Inland Transport Organisation. Admission will be free, without ticket.

Railway Land Grants in the U.S.A.

The Association of American Railroads is endeavouring to correct a widespread public impression detrimental to the private operation of railways

THE *Mississippi Valley Historical Review* for September, 1945, published an article by Colonel Robert S. Henry, Assistant to President, Association of American Railroads, entitled "Railroad Land Grant Legend in American History Texts."

This subject is so important and so widely misunderstood that our U.S.A. contemporary the *Railway Age* reproduced two maps from this survey and a precis of the essential text. Colonel Henry examined the quality of reporting in 37 textbooks of American history on the story of the land grants made to the railways by the Federal Government. The total area of such lands actually granted was approximately 131 million acres. Of the 37 textbooks examined, Colonel Henry discloses that 24 make specific reference to the area of land granted; but that only a couple of them give approximately correct figures of its extent. Fifteen of the textbooks, either graphically or in figures, show the area granted as anywhere from 20 per cent. to 400 per cent. more than it actually was.



This map, originally drawn to show the extreme outer limits of areas within which some land might be granted to railways, is frequently reproduced in American history textbooks with captions describing it as showing lands actually granted, thereby exaggerating by approximately four times the area received by railways

Typical U.S.A. history book map giving a highly-exaggerated false impression of the area of lands granted to the railways

The principal source of exaggerated conclusions as to the amount of land thus given away by the Federal Government in the encouragement of railway building, Colonel Henry finds to be the misinterpretation of land-grant maps, such as that reproduced above, which portray—not the area of land actually granted to the railways—but the limits within which such lands were located.

As Colonel Henry's article explains, lands were granted to railways in alternate sections (640 acres) on a "checkerboard" pattern for a certain distance (varying from 6 miles to 40 miles) on each side of a proposed railway line. If a section which should have gone to a railway under this "checker-board" arrangement had been sold already to someone else, or was held back by the government for some reason, it was provided that the railway would be recompensed by the grant of a substituted section of land beyond the original zone of 6 to 40 miles. The areas in which these substitutions were made were known as "indemnity limits," and ran as high as 60 miles on each side of a railway receiving land grants; and, of course, a map showing these limits would cover a lot more area than that which was actually deeded over to the railways.

Actually, the railways received only a fraction of the land within the "indemnity limits," but lack of caution in interpreting such maps led to the assumption that the width of the "indemnity zones" gave an accurate portrayal of the area of land which actually passed to the railway.

Subsequently, maps were published in some of the history textbooks which show the "indemnity limits" as the land actually granted to the railways; and they made the exaggeration worse by including with the railway land grants, lands granted for highway and river improvements, without explaining this inclusion.

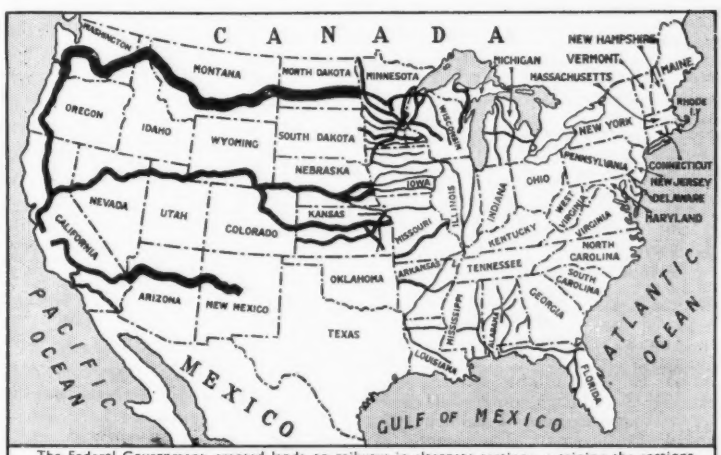
Furthermore, Colonel Henry explains, some of the books call attention in their texts to such erroneous maps and ask the reader to judge from them what a "kingdom" was given to the railways.

Colonel Henry further points out that these grants were made in assistance to only 18,738 miles of railway; approximately 92 per cent. of the country's railway mileage received no such assistance. The "minimum" price at which the public domain was offered for sale at the time of the land grants was $1.25 an acre although, says Colonel Henry, "the government was never able to realise even this figure as an average selling price."

At $1.25 an acre, the land grants, at most, were worth $164 million. Government land sales averaged a price of about $1 an acre, by which measure the land grants were worth $131 million. Such facts, in Colonel Henry's opinion, scarcely warrant such adjective as "lavish," "munificent," and "princely" which some of the history writers use in characterising these grants, the magnitude of which they have misrepresented.

"A Canny Landowner"

All but two of the 37 history textbooks examined neglect to mention the important fact that railway rates on government traffic have been subject to a "deduction" because of these land grants—a means of compensation which a Congressional committee early in 1944 estimated had yielded the Federal Government $900 million, or more than five times the value of the lands when granted. The facts, Colonel Henry insists, do not bear out the portrayal presented in many history books of "Uncle Sam scattering his substance with reckless extravagance, instead of the much more nearly correct picture of a canny landowner using part of his holding to increase immeasurably the value of the rest, not as gift but on terms which constituted a shrewder bargain than he realised."



The Federal Government granted lands to railways in alternate sections, retaining the sections between. It is impossible to present this "checkerboard" pattern on so small a map, but the shaded areas show the approximate locations of the land grants, and are in proportion to the amounts actually received by railways

Accurate impression of the extent of Federal land grants to encourage developmental railway construction

Railways in Iraq, 1941-43

A summary of railway developments in that country during those eventful years

IRAQ first came prominently into the war picture in the summer of 1941, and the threat of German invasion from Caucasia on the one hand, and the urgent need for sending supplies to Russia on the other, combined to focus attention on its transport systems, railways, and inland waterways.* Their co-ordination was essential, and a Transportation Directorate was established by the military authorities in July of that year to insure rapid and smooth co-operation. Briefly, the position on the railways at that time was as recorded on page 550 in *The Railway Gazette* of June 1, 1945. Thereafter, engineer construction and maintenance troops carried out all new construction works and sometimes assisted the Iraqi Railways' engineering maintenance staff. Meanwhile, operation continued under the Director General (General Manager) of the Iraqi State Railways and his peacetime operating staff, reinforced by officers and workshop and operating units of the army who also worked the purely military sections of line.

The first and most pressing task to be undertaken in 1941, and, indeed, until the series of great Russian victories in 1943 caused tension to relax, was to increase the capacities of the three principal railways and their branches. These were (*a*) the Basra—Baghdad metre gauge main line (360 miles), (*b*) the Baghdad—Mosul—Tel Kotchek 4 ft. 8½ in. gauge main line (328 miles), and (*c*) the Baghdad—Kirkuk line and its branch to Khaniqin, on the Persian frontier, also metre gauge; (*b*) and (*c*) are connected by wagon ferry across the Tigris at Baghdad. All these were single lines.

Increased Capacity

It was decided to double the Basra—Baghdad line, but as an interim measure, construction of no fewer than 39 additional crossing stations was begun and hurried to completion, although earthwork for the doubling of some sections was in hand. Eventually, some 250 miles of this earthwork were completed and 100 miles of track opened. As this line crosses the Euphrates near Samawa, it was thought inadvisable to build a second bridge at that point, and, instead, it was considered preferable to construct a long diversion on the west bank of the river *via* Nejf to Karbala to rejoin the old alignment at Hindiyah, using the Hindiyah Barrage to cross the river. Only a short length of earthwork was actually done on this diversion.

The capacities of lines (*b*) and (*c*) were also increased by the construction of additional crossing stations.

As space for the expansion of transhipment yards—from metre to standard gauge—was very restricted in the Baghdad area, new yards were constructed at Mussayeb, near Hindiyah, and the 42 miles of doubling from near Baghdad to that point was carried out with standard-gauge track. To avoid congestion in Baghdad, this new standard-gauge track joined the Baghdad—Mosul main line some two miles north of the capital.

Additional locomotive facilities were also provided; depots were extended and new ones built. As shade had to be provided for the maintenance staff, and as normal materials were not available, engine sheds were roofed with wooden trusses and straw matting. It is remarkable that no fires occurred as a result of using these materials. Water supplies were augmented by bringing water along unlined channels from rivers and canals to ground settling and storage tanks.

Base Facilities at Basra

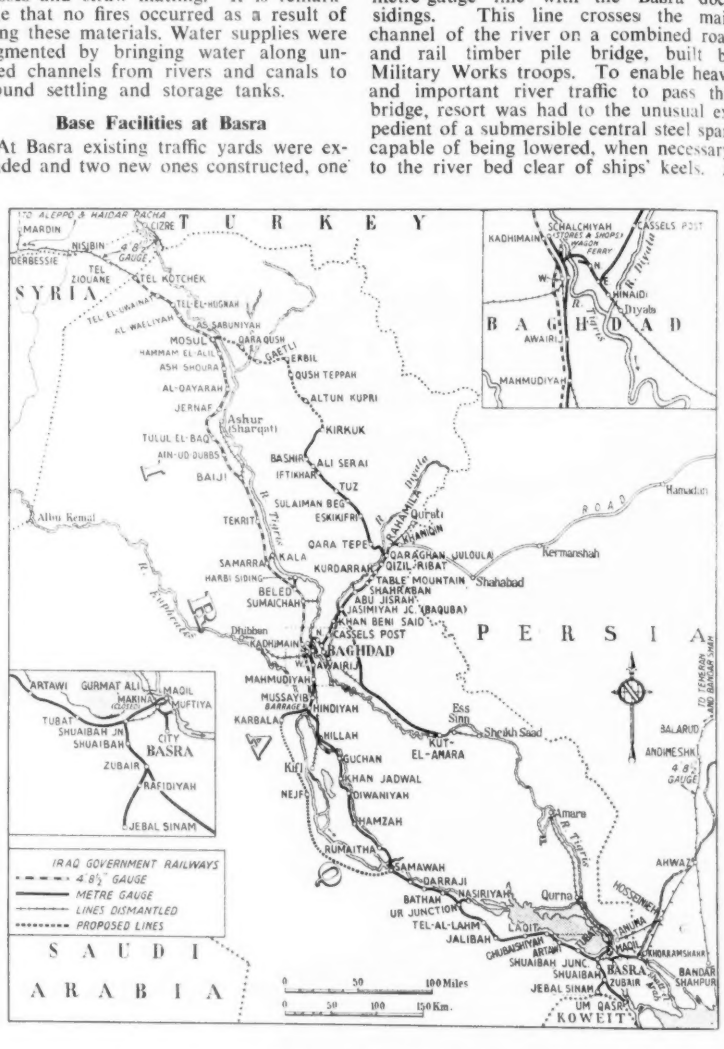
At Basra existing traffic yards were extended and two new ones constructed, one for the direct reception of down goods trains, avoiding the existing station, and the other at the north end of the docks area to receive loads from the shipping berths. Additional berths and rail connections to them were also constructed and other alterations and improvements were constantly being made in the docks area.

New Line to Alternative Base Port

As all ships for Basra had to sail for 100 miles up the Shatt-el-Arab, the channel by which the combined waters of the Tigris and Euphrates flow into the Persian Gulf, and as this channel was liable to be closed or blocked, a satellite port was constructed at Um Qasr with an approach channel from the Gulf independent of the Shatt-el-Arab. This new port was served by a new 20-mile railway constructed from Shuaibah Junction, 10 miles west of Basra.

Basra—Tanuma Submersible Bridge

Tanuma—the new Persian railways Gulf port on the east bank of the Shatt-el-Arab opposite Basra†—was also connected (by railway troops in Iraq) by a metre-gauge line with the Basra dock sidings. This line crosses the main channel of the river on a combined road and rail timber pile bridge, built by Military Works troops. To enable heavy and important river traffic to pass this bridge, resort was had to the unusual expedient of a submersible central steel span, capable of being lowered, when necessary, to the river bed clear of ships' keels. A mixed-gauge transhipment yard was also provided at Tanuma.



The railways of Iraq and neighbouring territories

Railways Serving the Base Depots

As Basra and its immediate environs are low-lying, the extensive base depots required to serve the various army services were established on higher ground round Shuaibah and from there southwards. To serve them the Shuaibah Junction—Jebal Sinam line, originally constructed as a quarry line in the first world war, was relaid. The 10-mile Basra—Shuaibah Junction section, carrying very heavy traffic, was the first to be doubled. As a relief to it, a new chord, known as the Makina loop, was built from the south end of the docks to Shuaibah Fort, the first station on the Shuaibah Junction—Jebal Sinam line, thus providing direct access to the base depot area from the

* See editorial note, page 503.

† Referred to in "British Work on Persian Railways, 1942," in our issue of February 2, 1945, and subsequently reprinted as a brochure.

berths. As the traffic involved averaged approximately 3,000 tons a day, another sorting yard had to be laid out at Shuaibah Fort.

Also, to accommodate traffic from the base depots destined for up-country, yet another sorting yard was necessary at Shuaibah Junction, complete with a new locomotive depot. Altogether, more than 100 miles of track were laid in the Shuaibah area. The mixed-gauge advanced base yards in the Hindiyah area south of Baghdad also involved about 100 miles of track.

This new line was described in our issue of June 1 last, but it should be mentioned that to avoid reversing all trains from Kut destined for Khaniqin at Baquba, the actual junction is at Jasimujah, near Baquba. Mechanical excavator companies of the Indian Engineers made a fine job of the construction of the embankment for this line with their carry-all scrapers.

Strength of Railway Engineer Troops

The maximum strength of railway construction and maintenance troops available at any one time in Iraq was 12 companies, and in addition one Polish railway unit. Two of the railway engineer companies were lent to the Iraqi State Railways to assist in fettling and ballasting the hastily-completed unballasted Baghdad—Mosul line.

Everywhere co-operation between the engineer troops and the I.S.R. engineering staff was close and excellent. The I.S.R. had no reserve of officers to draw on, and military engineers and permanent way staff were lent to assist in maintenance and new works for the Army. A Polish railway battalion, which arrived in 1942, consisted mainly of workshop and operating units, but had also one construction unit.

Operation

To assist the I.S.R. in working the vastly increased train services, including the new crossing stations and sections of line, there were in Iraq in 1943 one British and five Indian operating companies. In the previous year the I.S.R. administration had divided up its Traffic Department into Operating and Commercial Branches. Posts of Chief and Deputy Movements Superintendents were created, as well as four District Superintendents. All these were filled by officers of railway units lent to the I.S.R. Locomotive officers were also lent to the Chief Mechanical Engineer. Commanders of operating companies were appointed as District Superintendents and their units were incorporated in the I.S.R. organisation. The Chief Movements Superintendent was directly responsible to the Director General of the I.S.R.

The Polish workshop staff went to Baghdad and the operating personnel was employed on the Kut line for both station and train working. They were, however, much under strength, and the language difficulty was at first acute, especially with the paper line-clear system—based on Morse telegraph messages—in force, as few of the Poles understood the Morse code.

Normally, military units took no part in the commercial working of the railways, but military areas were worked exclusively by military staff, which also reinforced the Iraqi operating personnel on commercial sections when necessary.

At no time was there sufficient staff to open and man all the new crossing stations, but with those that were opened and with the sections of double line brought into use, an average of 10 trains a day each way were worked on the main line between Basra—Shuaibah and Baghdad—Hindiyah; at times 12 were run.

From the docks a daily clearance of 4,000 tons a day by rail was a fair average in the later stages, 3,000 tons for the Shuaibah depots and 1,000 going direct from the docks up country.

Difficulties Reduced by Traffic Control

In considering these figures it should be noted that there were no continuous brakes on any goods trains, no interlocking anywhere, and sometimes no semaphore signals at all, but only hand signals; points were set by hand and padlocked. Although traffic control was subsequently installed, much delay occurred previously, especially when three trains met at a crossing station with only one loop line, as the stationmasters had never before been faced with such a problem. The military staff installed control at three centres, Basra, Baghdad, and Samawa, half-way between the two cities, this being made possible by the handing over to the railway troops of two Army G.H.Q. telephone wires connecting Basra and Baghdad. Control operation was by military personnel, and this greatly improved train working.

When aid-to-Russia traffic began to flow freely into Khaniqin both *via* Baghdad and the wagon ferry, and also by river transport and the new line from Kut, facilities at Khaniqin proved to be totally inadequate, and a new railhead was opened some two miles below that town. There was direct entry to it from a new station, and its main line was circular in plan, with numerous spurs for the supplies of the various services and a long rail-road transhipment area for the Russian supplies, forwarded thence by lorry. This railhead was worked by military personnel.

Rolling Stock

In 1941, 169 metre-gauge locomotives of various types and ages, released from Indian railways, were received in Iraq. Some 9,000 wagons also came from the same source, and were usually received with the wheels and undergear removed and the body and roof cut up. Two Indian workshop companies by working in double shifts put together an average of 35 of these wagons daily.

Some 900 broad-converted-to-standard-gauge wagons were also received from India, and were erected by another Indian workshop unit at Baghdad. The assembly plant there also subsequently put together the parts of a number of new wagons received from the U.S.A. In both assembly plants Iraqi and Persian skilled and unskilled personnel assisted the Indians.

The standard-gauge locomotive position before the receipt of the McArthur American engines was as stated in our issue of June 1 last. It should be realised that until the completion of the Haifa—Beirut—Tripoli railway, all standard-gauge locomotives had to be unloaded at Basra and forwarded by barge up the Tigris to Baghdad for assembly there. A special dock to receive them was excavated at Baghdad and for the river journey two pairs of barges were strengthened, joined together, and laid with tracks. A floating pontoon and ramped approach of old bridge spans allowed for unloading at almost all river levels. A small compressed-air motor was used to draw the locomotives up the ramp. Actually, the Haifa—Tripoli line was opened before most of the American main line locomotives were received, and they were sent from Egypt by rail all the way to Baghdad. A number of American shunting engines continued to be sent up the Tigris, however, and the returning barges carried American gondola cars from Egypt destined for Persia.

Locomotive Defects

The saline water in the area between Basra and Baghdad gave a lot of trouble, causing excessive scaling and many tube failures, until the staff grew more experienced in preventing and dealing with these defects, when great improvement was manifest. Similarly, until the completion of wagon erection released a number of experienced train examiners, there were epidemics of hot boxes that jammed the new crossing stations having only one loop siding, a running line. Two small schools were also opened to train artisans, but, though the quality of the staff improved, its quantity was always inadequate.

Nevertheless, the railway units in Iraq, working in fierce extremes of climate and with only tents to live in, and despite innumerable difficulties, managed to increase the capacity of the I.S.R. out of all recognition and to move large quantities of supplies for both Iraq and Russia.

STOCKHOLM-PARIS BUS SERVICE.—A bus service between Stockholm and Paris, thrice monthly in each direction, is being inaugurated on May 15 by a private Swedish transport company with headquarters in Stockholm. An extension to Nice is envisaged. The occupying authorities have authorised the transit through Germany.

FORTH BRIDGE REPAIRS.—Major repair work on the Forth Bridge was commenced on April 28. This is the second time since its opening that repairs have been undertaken; the previous occasion was during 1915-19, when work was carried out to the floor of the bridge. This time the ends of all the main girders of the approach viaducts are being given attention. The work consists of re-conditioning the girder bearings and strengthening them in accordance with modern practice, as well as replacing the cast-iron bedplates on the tops of the piers with cast-steel bedplates. It is hoped that the work will be completed before the end of 1947. The work has been so arranged as to cause minimum interference with rail services, but the lines over the bridge will have to be closed to traffic from 12.1 a.m. to 10 a.m. each Sunday, and for two periods of four hours in mid-week. At all times speed reduction will be necessary. The L.N.E.R. has arranged that on Sundays the 4.20 a.m. train from Edinburgh (Waverley) to Aberdeen (the 7.30 p.m. Saturday from Kings Cross) will be diverted *via* Alloa, Dunfermline (Upper) and Thornton, and will be due at Aberdeen at 9.17 a.m. The 7.35 a.m. Sunday train Edinburgh (Waverley) to Aberdeen also will follow this route, and a connecting service will be run from Dunfermline (Upper) to Inverkeithing. Connection to and from Kirkcaldy will be made at Thornton. The 7.40 a.m. train Edinburgh (Waverley) to Perth on Sundays will leave at 7.50 a.m. and run *via* Alloa Bridge, Stirling and Dunblane, and an additional train will be run leaving Inverkeithing at 8.8 a.m. to give a service to Perth for passengers travelling from Inverkeithing, Dunfermline (Lower), Cowdenbeath and Kinross.

Rebuilt "K 4" Class 2-6-0 Locomotive, L.N.E.R.

Modifications which increase accessibility, and provide a better weight distribution as compared with the 0-6-0 type

BY the courtesy of Mr. Edward Thompson, Chief Mechanical Engineer, L.N.E.R., we give the following description of an interesting locomotive conversion recently carried out at Doncaster Works.

A locomotive of the "K4" class (three-cylinder 2-6-0) has been rebuilt as a two-cylinder machine, to discover whether this type of engine will prove to be of greater utility in the future than the standard "J39" class 0-6-0. Only one locomotive has been so converted; it bears the name *MacCailin Mor* and the running number 3445, and is one of a number of engines designed by the late Sir Nigel Gresley for service on the West Highland line, for which their comparatively small (5 ft. 2 in.) driving wheels and high tractive effort (36,600 lb. at 85 per cent. boiler pressure) make them particularly suitable.

A considerable simplification of the design has resulted from the conversion. No. 3445 has been fitted with the same boiler as the "B1" class, which carries a pressure of 225 lb. per sq. in. (as against the 200 lb. per sq. in. pressure of the original boiler). Instead of the three cylinders, two standard cylinders interchangeable with the "B1," "L1," and "O1" classes (4-6-0, 2-6-4 tank, and 2-8-0 respectively) have been substituted. Ordinary Walschaerts gear replaces the Gresley motion formerly fitted. Incidentally the pony truck is interchangeable with the "L1" and "O1" types.

This conversion has been carried out primarily to provide a locomotive of appreciable power to deal with the workings at present undertaken by the L.N.E.R. "J39" class of engine, which has the 0-6-0 wheel arrangement. The coupled-wheel diameter (5 ft. 2 in.) is the same in both classes; but the "J39" class has an axle load of 19 tons 11 cwt. on the leading coupled wheels, which makes it necessary for the Chief Engineer to impose considerable restrictions—which it will be possible to relax in a number of instances with the converted 2-6-0 locomotive.

No. 3445, which is now reclassified "K1," has the whole of its running gear outside the frames, thus presenting the maximum accessibility for repair work, both at the shops and in the sheds. We give below comparative leading dimensions of the "J39" class, the "K4" class before conversion, and the new "K1" class of locomotive.

	"J39"	"K4"	"K1"
Cylinders, number ...	2	3	2
Dia. and stroke, in. ...	20 × 26	18½ × 26	20 × 26
Type of valve gear ...	Stephenson	Gresley	Walschaerts
Max. valve travel, in.	5¾		6¼
Coupled-wheel dia. ...	5 ft. 2 in.	5 ft. 2 in.	5 ft. 2 in.
Boiler pressure, lb. per sq. in.	180	200	225
Heating surface :—			
Firebox, sq. ft. ...	171·5	168	168
Tubes, sq. ft. ...	1,226·28	1,263	1,240
Superheater, sq. ft.	271·8	310	300
Combined total, sq. ft....	1,669·58	1,741	1,708
Grate area, sq. ft. ...	26	27·5	27·9
Tractive effort at 85 per cent. boiler pressure, lb. ...	25,664	36,600	32,081

(*See illustrations on opposite page*)

Celebrating the Return of the "Golden Arrow"

ON the inauguration of the "Golden Arrow" service from London to Paris *via* Calais on April 15, Mm. Fournier, President, and Lemaire, General Manager, of the French National Railways, gave a dinner at the Hotel Terminus, Gare St-Lazare, Paris, to Colonel E. Gore-Browne, D.S.O., Chairman, and Sir Eustace Missenden, O.B.E., General Manager of the Southern Railway. The restoration of the "Golden Arrow" service was reported in our April 19 issue, and the dinner in Paris was preceded by one in London on April 14 given by the Southern Railway and Pullman Car Companies, at which representatives of the French railways were among the guests.

Colonel Gore-Browne and Sir Eustace Missenden were accompanied by Mr. O. V. Bulleid, Chief Mechanical Engineer, Mr. C. Grasemann, Public Relations & Advertising Officer, Mr. R. H. Hacker, Continental Superintendent, Mr. A. M. Newbold, General Agent, Paris, and Mr. P. C. Durrant, Assistant General Agent. This gathering brought together officers of the French and British railways, and representatives of the International Sleeping Car Company.

A Closer Link

M. Fournier spoke of the importance of the new service, which provided a closer link between the two countries. He recalled the launching of the ss. *Arromanches* at Le Havre on March 15. This name for the new French passenger vessel brought back so vividly the glorious achievements of the allied friends of France and the feeling of hope which was engendered at that time. He toasted the success of the Southern Railway, of the "Golden Arrow" Service, and of Anglo-French friendship.

Colonel Gore-Browne, responding to the toast, spoke of the wonderful results obtained by the Resistance Movement of the French Railways during the period of enemy occupation, and of their helpful collaboration at the time of liberation. He went on to say that the British railways had also suffered great damage during the war, creating difficulties which had been successfully overcome thanks to the untiring efforts of the staff, but he expressed his amazement at the extraordinary progress in rehabilitating the French railways, which he had seen personally on the occasion of the various journeys he had made in France. He recalled that the Southern Railway fleet had been greatly reduced as a result of military requirements and war damage, as had also the French cross-Channel fleet, and he expressed the hope that in the near future we should see the French flag flying on vessels running between France and the Southern Railway ports.

M. Lemaire, General Manager of the French National Railways, spoke of the close ties which existed between the French and the British railways and which would become closer with the institution of the new service.

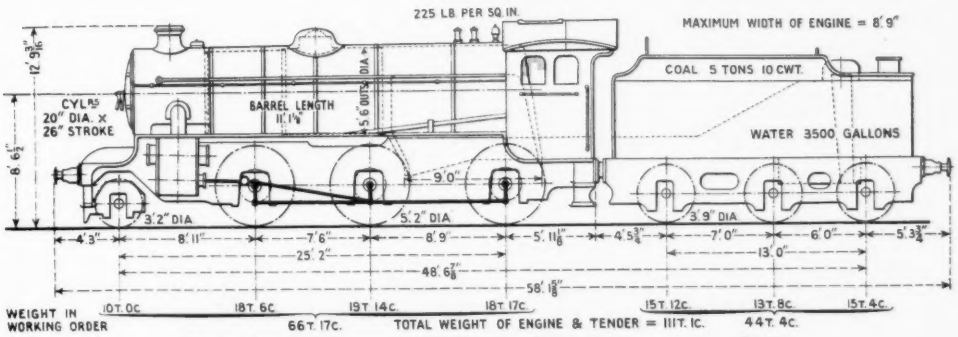
Sir Eustace Missenden, in a concluding speech, said that the service which had been inaugurated that day represented in reality the first purely civilian service between England and France since the war, as the service *via* Newhaven—Dieppe had been begun for military traffic. He expressed his thanks to the officers of the French railways for the close co-operation they had always been ready to give to his officers, whose combined efforts had brought about the restoration of the Dover—Calais service. He terminated by expressing the hope that the French railways would do all in their power to fill the ss. *Canterbury* in the direction from France to England, as he had no fear of the success of the line in the opposite direction.

The "Golden Arrow" leaves Victoria Station

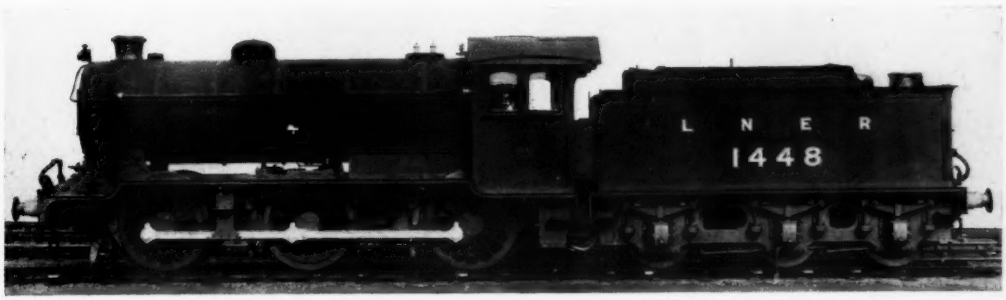
Mr. Alfred Barnes, Minister of Transport, bidding "au revoir" to Driver Peck as the "Golden Arrow" left Victoria Station on April 15. With the Minister of Transport is M. R. Massigli, the French Ambassador

Rebuilt "K4" class 2-6-0 Locomotive, L.N.E.R.

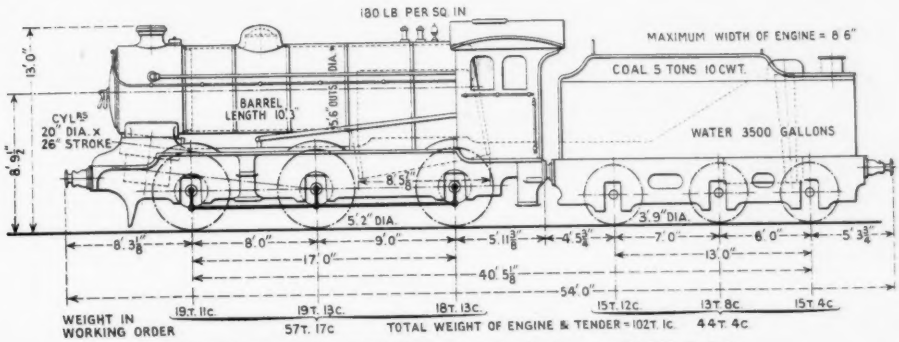
L.N.E.R. 2-6-0 No. 3445 rebuilt with two cylinders and now classified "K1"



Dimensions of former "K4" class locomotive as now rebuilt



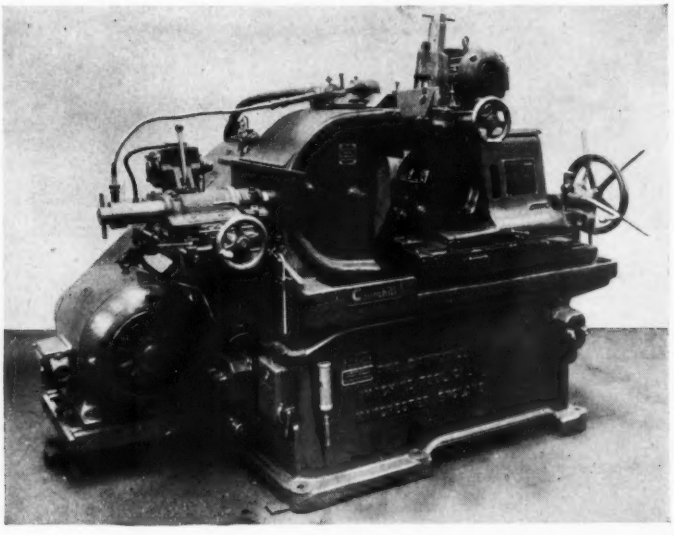
L.N.E.R. class "J39" 0-6-0, some of the duties of which will be undertaken by the new "K1" class illustrated above



Dimensions of the L.N.E.R. standard class "J39" 0-6-0

A New Centreless Grinding Machine

Uniform speed of traverse is secured by an electrically-driven truing device to the grinding wheel



THE Churchill Machine Tool Co. Ltd., of Broadheath, near Manchester, has introduced a new centreless grinding machine for work up to 6 in. dia., with a 20-in. dia grinding wheel and a 12-in. dia. control wheel. A maximum space of 6⅜ in. can be secured between full-size grinding and control wheels. The work rests are designed to suit either through-feed or in-feed grinding. A quick-change swivelling through-feed work rest is available for work from ¼-in. to 2-in. dia., either in long or short lengths. For longer work a patented inclined platform is available. For bar work, lengths up to 18 ft. can be dealt with, and provision is made for quick setting.

The grinding wheels, 20 in. dia., are supplied up to 8-in. wide, with 12-in. hole; the 12-in. dia. control wheels are up to 8 in. wide with a 5-in. hole. There are twelve control wheel speeds, ranging from 12 to 250 r.p.m. The driving motor may be from 15 to 25 h.p., according to the width of the grinding wheel, and may give any constant speed from 900 to 1,460 r.p.m.

A fine micrometer adjustment for the control wheel slide governs movement to within 0·0001 in.; quick adjustment is effected by a pilot wheel.

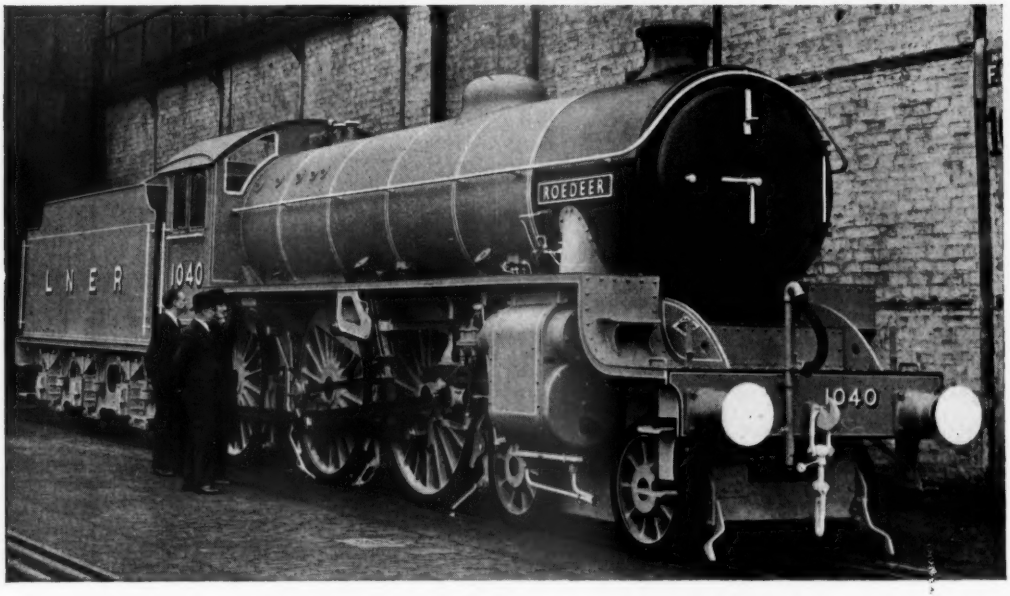
The grinding wheel spindle is lubricated by a pumped supply of filtered oil. A patented swarf separator is fitted. The oil flow is visible at all times. Pad lubrication is arranged for the control wheel spindle. Other bearings are oil-gun lubricated.

The chief advantages of centreless grinding are summarised by the makers as—

(1) Operation is continuous on through-feed grinding and almost so on in-feed grinding.
(2) The basic simplicity of the machine minimises the possibility of error.
(3) Concentricity is achieved at high rates of output.
(4) Centring and centring errors are avoided.
(5) No deflection of work occurs.
(6) There is no end thrust from the centres to distort slender work.
(7) Less grinding stock is required.
(8) The machine is suited for the application of automatic and magazine feeds.

The new machine incorporates the Hydrauto bearings developed by the makers for the grinding and control wheel spindles, which are of Nitralloy steel. The control wheel spindle, truing device, change-speed and motor drive form one self-contained unit; and care has been taken to ensure the greatest possible rigidity by avoiding drives within the machine body, which forms an unyielding mounting for the moving parts of the machine.

L.N.E.R. Locomotive Built by North British Locomotive Co. Ltd.



First of the "Antelope" class locomotives which are being built by the North British Locomotive Co. Ltd., Glasgow, for the London & North Eastern Railway. The design is the same as that of the first of the class, the "Springbok," which was described and illustrated in our January 15, 1943, issue, except that certain items have been supplied in steel castings instead of being fabricated

RAILWAY NEWS SECTION

PERSONAL

L.M.S.R. APPOINTMENTS

Mr. W. P. Bradbury to be Chief Commercial Manager, *vice* Mr. F. A. Pope.

Mr. A. W. Norman to be Chief Stores Superintendent, *vice* Mr. R. A. Riddles.

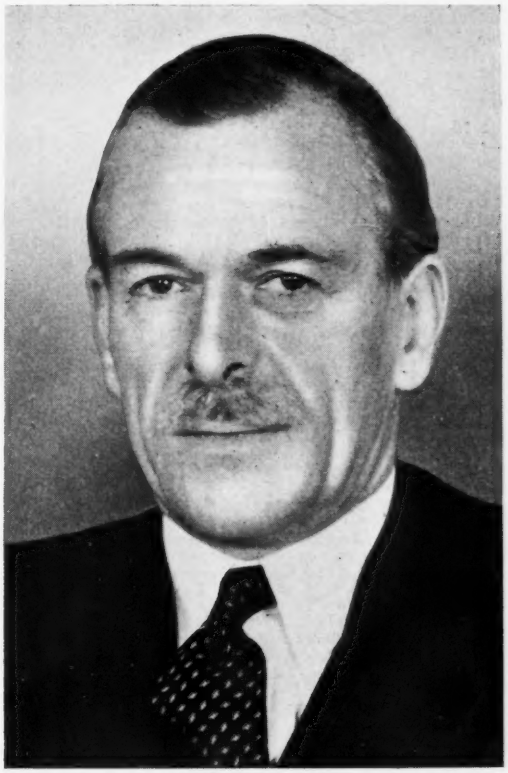
Mr. P. R. Hickman to be Assistant Chief Stores Superintendent, *vice* Mr. A. W. Norman.

Mr. F. A. Pope, C.I.E., M.Inst.T., Chief Commercial Manager, London Midland & Scottish Railway, who, as recorded in our last week's issue, has been appointed a Vice-President of the company, was educated at The Leys School, Cambridge, and joined the former London & North Western Railway in 1910. The principal appointments he has held with the L.M.S.R. include Superintendent of Operation (1938-40); Manager, Northern Counties Committee, Belfast (1941-43); and Chief Commercial Manager (1943-46). He served with distinction in both world wars, attaining the rank of Major during his service in France and with the Salonica Force during that of 1914-18, when his awards included a mention in despatches, the Greek Order of Merit, and the White Eagle of Serbia. In 1940, Mr. Pope was appointed Director of Railways, B.E.F., with the rank of Colonel. He was again mentioned in despatches. After the evacuation from France he returned to the L.M.S.R. In his considerable overseas transport experience, Mr. Pope has held appointments as Divisional Superintendent and as Acting Superintendent of the Line, Nigerian Railway (1925-30); in 1932 and 1933 he twice visited India, when his services were lent to the Government of India as Chairman of a committee appointed to recommend measures for achieving greater efficiency and economy on the Indian railways. He went to India again in 1944-45 as Regional Port Director, Calcutta, and was made a C.I.E. in June, 1945.

Mr. R. A. Riddles, C.B.E., M.I.Mech.E., M.I.Loco.E., Chief Stores Superintendent, London Midland & Scottish Railway, who, as recorded in our last week's issue, has been appointed a Vice-President of the company, joined the former London & North Western Railway as a premium apprentice at Crewe Locomotive Works in 1909. After serving with the Royal Engineers from 1914 to 1919, he held technical appointments with the L.N.W.R. and L.M.S.R. at Crewe and Derby, before being appointed Locomotive Assistant to the Chief Mechanical Engineer (1933), Principal Assistant to the Chief Mechanical Engineer (1935), Mechanical & Electrical Engineer (Scotland) (1937), and Chief Stores Superintendent (1943). Mr. Riddles' services were lent during the recent war to the Ministry of Supply to create a directorate for the provision of transport equipment (D.T.E.); and he was given also the responsibility for all Royal Engineer equipment. The experimental bridging establishment at Christchurch came under the directorate, which designed and produced the Bailey Bridge and other items of field equipment. The Everall Bridge for railway purposes also was produced by the directorate. It provided internal-combustion engines other than aircraft, road vehicle and submarine; cranes; pipe-lines; road-making machinery; pumps; generators; printing machinery; smoke producers; and all-track tractors. The directorate also was instrumental in supplying piers and pierheads for the "Mulberry harbour"—the prototypes had been completed and tested before Mr. Riddles left the Ministry at the request of the L.M.S.R. in August, 1943. Mr. Riddles was prominently concerned with the design and production of large numbers of standard British-built locomotives provided during the war primarily for service overseas; over 1,000 of the "austerity" 2-8-0 and 2-10-0 types were built. In 1941 he was appointed Deputy Director-General, Royal Engineer Equipment, and had a special mission dealing with supplies to Russia, and visited America to ensure that essential stores were sent to Persia.

Mr. F. A. Pope

Appointed a Vice-President, L.M.S.R.



Mr. R. A. Riddles

Appointed a Vice-President, L.M.S.R.

The late Sir Alexander Kaye Butterworth, who was General Manager of the North Eastern Railway from 1906 to 1921, left £32,584.

Mr. J. C. Patteson (European General Manager, Canadian Pacific Railway) has been elected President for the ensuing year of the Canadian Chamber of Commerce in Great Britain. Mr. George E. Cowie (General Freight Agent, Canadian National Railways) has been re-elected Honorary Treasurer of the Canadian Chamber of Commerce in Great Britain.

Lt.-Colonel Sir Murrough John Wilson, K.B.E., whose death, at the age of 70, we recorded last week, was Deputy-Chairman, and Chairman of the Traffic Committee, of the London & North Eastern Railway Company. Sir Murrough Wilson was educated at Marlborough. From 1893 to 1902 he was employed in the Traffic Department of the old North Eastern Railway, of which he was elected a Director in 1912. He became Deputy-Chairman of the L.N.E.R. in 1934. Sir Murrough Wilson served with the Yorkshire Regiment, 1914-18, and in the latter year was elected M.P. for the Richmond Division of Yorkshire, the seat he held until 1929. He was created a K.B.E. in 1927. At the time of his death he represented the L.N.E.R. on the Cheshire Lines Committee and the board of the Forth Bridge Railway Company, and was a Director of the London Electric Supply Corporation Limited, and other companies; and he recently had resigned from the board of the Peruvian Corporation Limited. The funeral of Sir Murrough Wilson took place at Manfield, Piercebridge, near Darlington, on May 4. Among those present, in addition to family mourners, were:—

Sir Ronald W. Matthews, Chairman, and Mr. Geoffrey H. Kitson, a Director, of the London & North Eastern Railway Company; and the following officers of the company: Messrs. C. M. Jenkin Jones, Divisional General Manager, North Eastern Area (representing Sir Charles H. Newton, Chief General Manager); T. F. Cameron, Divisional General Manager, Scottish Area; Paul Gibb, Goods Manager, S. T. Burgoyne, Passenger Manager, E. M. Rutter, Superintendent, C. M. Stedman, Locomotive Running Superintendent, G. Tunbridge, Estate Surveyor, and J. L. Meadowcroft, Hotels Superintendent, North Eastern Area; J. Taylor Thompson, Engineer (York); H. S. Cole, Chief of Police, North Eastern & Scottish Areas; L. W. Ibbotson, District Superintendent, Darlington (representing Mr. J. E. M. Roberts, Assistant Divisional General Manager, North Eastern Area); H. F. Sanderson, Principal, All-Line Commercial School, Darlington; I. V. Longley, District Locomotive Superintendent, Newcastle; L. Sproat, District Superintendent, Newcastle; J. D. Horgan, District Goods Manager, Middlesbrough; C. R. Hinds, Locomotive Works Manager, Darlington; H. W. Green, Electrical Engineer, Newcastle.

The late Lt.-Colonel Sir Murrough Wilson
Deputy-Chairman, London & North Eastern Railway Company, 1934-46

A memorial service for Sir Murrough Wilson will be held in St. Botolph's Church, Bishopsgate, London, E.C., at 12.30 p.m. today (May 10).

Mr. S. H. Gould, Chief of Divisional Trains Office, Office of Divisional Superintendent of Operation, Crewe, L.M.S.R., who, as recorded in our April 12 issue, has been appointed Assistant, Passenger Services, Chief Operating Manager's Office, Watford, H.Q., joined the L.N.W.R. in 1917. In 1924 he was attached to the staff of the Chief General Superintendent, L.M.S.R., holding positions at Lancaster (in that year) and at Preston (in 1925). He was transferred to the staff of the District Controller, Birmingham, in 1926, and three years later he was appointed Assistant District Controller, Nuneaton; he occupied similar positions at Patricroft in 1930 and at Willesden in 1931. Mr. Gould was in charge of the Euston Sub-Office of the Divisional Superintendent of Operation (Western Division) from 1934 until 1936, when he was appointed Assistant Divisional Controller (Passenger Services), Crewe; from December, 1939, he was Acting Divisional Controller (Passenger Services) there, in which position he was confirmed in February, 1943. He became Chief of Divisional Trains Office, Crewe, in October, 1944. From 1926 to 1933 Mr. Gould held a commission in the Royal Corps of Signals (Supplementary Reserve) serving in the rank of Captain with No. 2 Lines of Communication Company (Railway Telegraphs).

Mr. B. Holroyde, A.M.Inst.C.E., who, as recorded in our March 15 issue, has been appointed Carriage & Wagon Works Manager, Stratford, L.N.E.R., was educated at Oundle School, and in 1927 became a pupil of the late Sir Nigel Gresley, then Chief Mechanical Engineer,

Mr. S. H. Gould
Appointed Assistant, Passenger Services, Chief Operating Manager's Office, L.M.S.R.

Mr. B. Holroyde
Appointed Carriage & Wagon Works Manager, Stratford, L.N.E.R.

Mr. S. T. Willcox
Appointed Technical Assistant for Locomotives, C.M.E. Department, Waterloo, Southern Railway

L.N.E.R. He was appointed Locomotive Inspector, Middlesbrough, in 1931, and was Assistant to Works Manager, successively, at the Carriage & Wagon Works at York, Dukinfield and Doncaster, from 1932 until September, 1939. After serving as a Captain with the Durham Light Infantry, including service in France, he was recalled to railway service by the company, returning to Doncaster in October, 1940, and a month later was appointed Acting Carriage & Wagon Works Manager. In July, 1941, Mr. Holroyde became Assistant Works Manager, Doncaster Locomotive Works. In August, 1942, he went to Dukinfield on war work as Assistant Manager on Production, but in November, 1943, returned to railway work as Acting Works Manager, Faverdale Wagon Works, Darlington, which post he held until September, 1945. After a further six months at Doncaster Locomotive Works he was appointed Carriage & Wagon Works Manager, Stratford, last March.

Mr. S. T. Willcox, A.M.I.Mech.E., M.I.Loco.E., who, as recorded in our March 15 issue, has been appointed Technical Assistant for Locomotives, Chief Mechanical Engineer's Department, Waterloo, Southern Railway, was educated at Wells Blue School, Wells, Somerset, and at Bristol University, where he obtained the Diploma in Mechanical Engineering. He was a pupil and premium apprentice at Eastleigh Locomotive Works, Southern Railway, between 1925 and 1928, and then joined the South Indian Railway in the Central Locomotive, Carriage & Wagon Workshops, Trichinopoly, and was successively Assistant Mechanical Engineer, and Acting Progress, Planning & Plant Engineer. He left in 1937 and joined Rendel, Palmer & Tritton, for which he became Inspecting Engineer in the Manchester and Sheffield district. From 1940 to 1943 Mr. Willcox was with the Fighting Vehicle Production Directorate, Ministry of Supply, successively as Technical Assistant, Grade II, and Grade I, and Senior Technical Assistant. In May, 1943, he joined the Southern Railway, as Assistant to the Works Superintendent, Eastleigh, and latterly has been serving as Assistant to the Chief Mechanical Engineer (temporary staff).

Mr. J. F. Bickerton, Great Western Railway, has been transferred from associate membership to membership of the Institution of Civil Engineers.

Sir Arnold Musto, at present Regional Transport Commissioner for the Midland Region, has been appointed Regional Transport Commissioner for the South Western Region. Mr. R. Stuart Pilcher has been appointed Regional Transport Commissioner for the Midland Region. The appointments take effect from July 1 next.

Mr. Charles Pullan, who for some time has been Sales Manager of the Jarvis Industries Group, has been appointed a Director of Sir W. G. Armstrong, Whitworth & Co. (Ironfounders) Ltd.; Armstrong, Whitworth & Co. (Pneumatic Tools) Ltd.; and Jarrow Metal Industries Limited. While carrying out the duties attached to directorship, he will continue to control their sales organisations.

Mr. W. Atkinson, of the L.N.E.R. Advertising Department, retired on April 8 on account of ill health. He was well known in art circles in London, having been responsible to the Advertising Manager for all pictorial posters and holiday publications issued by the L.N.E.R. He was intimately concerned with the annual exhibition of L.N.E.R. poster art at the New Burlington Galleries.

Mr. W. A. H. Burrus, Advertising Manager's Southern Area Representative, L.N.E.R., since 1933, retired on April 20.

Mr. Dennis H. Handover, who has been Air Adviser to the British railways since January, 1944, is being released at his request on May 30 next. Mr. Handover played a leading part in the preparation of the Rail-Air plan for a European network of air services submitted to the Government by the railway companies and their shipping partners in October, 1944, and in the "Swinton Plan" of the Coalition Government. The present Civil Aviation Bill now before Parliament leaves no room for participation in air services by railway or shipping companies.

Mr. T. J. Lynch, who has been with the Railway Clearing House for many years, has been appointed Assistant Secretary.

Indian Railway Staff Changes

Mr. S. N. Gupta has been appointed to officiate as Commercial Traffic Manager, B.N.R., as from January 29.

On return from deputation to the Department of Industries & Supplies, Khan Bahadur G. Faruque, Transportation Manager, B.N.R., rejoined that railway as from January 17.

Mr. C. R. Martingell, Financial Adviser & Chief Accounts Officer, S.I.R., has been granted two years' leave preparatory to retirement as from January 1. Mr. K. Sadagopan has been appointed to officiate in his place.

G.W.R. Appointments

Mr. A. Dickson Wright, M.S., F.R.C.S., Senior Consulting Surgeon to St. Mary's Hospital, has been appointed Consulting Surgeon to the Great Western Railway Company.

Traffic Department

Mr. W. R. Stevens, Assistant Divisional Superintendent, Newport, to be Divisional Superintendent, Newport, on retirement of Mr. W. J. Pepler.

Mr. C. W. Powell, Operating Assistant to Superintendent of the Line, to be Divisional Superintendent, Swansea, on retirement of Mr. H. Williams.

Mr. L. W. Edwards, Assistant Divisional Superintendent, Bristol, to be Operating Assistant to Superintendent of the Line, Paddington.

Goods Department

Mr. H. S. Jenkins, Representative, Chief Goods Manager's Office (Development), Paddington, to be Chief Outdoor Representative, Chief Goods Manager's Office (Development), Paddington.

Docks Department

Mr. R. H. L. Bate, Assistant Dock Manager, Plymouth Docks, to be Assistant Dock Manager, Barry Docks.

Hotels & Catering Department

Mr. S. Sweeney, District Manager, Paddington, to be Assistant to Manager, Paddington.

Mr. S. E. L. Boyce, District Manager, Plymouth, to be District Manager, Paddington.

Mr. H. H. Warren, Head of Section, Paddington, to be Indoor Supervisor (Restaurant Cars), Paddington.

Solicitor's Office

Mr. W. G. Fletcher, Clerk, Paddington, to be Senior Managing Clerk, Paddington.

We regret to record the death, on April 30, at the age of 81, of Mr. Alexander Reith Gray, a Director of the London & North Eastern Railway Company.

The Minister of Labour & National Service has appointed Mr. E. M. Hunt to be Secretary of the Catering Wages Commission.

Awards are announced in the Fourth Supplement to *The London Gazette*, dated April 12, under the heading of Canada—Department of Transport, of the Imperial Service Medal, to 143 railway employees.

The following appointments have been announced by Metropolitan-Cammell-Weymann Motor Bodies Limited:—Mr. A. T. Cheesley (Production General Manager, Metropolitan-Cammell Carriage & Wagon Co. Ltd.) to be a Director; Mr. H. N. Edwards (Commercial General Manager, Metropolitan-Cammell Carriage & Wagon Co. Ltd.) to be a Director; Mr. W. H. Gray, Assistant to the Managing Director (Metropolitan-Cammell-Weymann Motor Bodies Limited) to be a Director; Mr. R. M. Cole (Sales Manager, Metropolitan-Cammell-Weymann Motor Bodies Limited) to be Assistant to the Managing Director; Mr. W. C. S. Chatfield (Metropolitan-Cammell-Weymann Motor Bodies Limited) to be Sales Manager.

South African Railways Mission

On Monday evening, May 6, a cocktail party was held at South Africa House, London, on the eve of the departure of the South African Railways Mission, which has been in this country for the past two months. The guests included chief and district officers of the G.W.R., L.M.S.R., L.N.E.R. and S.R. and L.P.T.B. and directors of firms manufacturing locomotives, rolling stock, and other railway equipment. The High Commissioner, Mr. G. Heaton Nicholls, in a brief speech, referred to the extensive programme of improvements now in hand by the South African Railways & Harbours, and referred to the forthcoming Royal visit and the Royal train which was being built in Birmingham for that occasion, on the lines of their famous "Blue Train." Mr. D. H. C. du Plessis, Head of the South African Railways Mission, also speaking on behalf of his colleagues, expressed his thanks for the co-operation and assistance they had received from the British railway companies and the manufacturers.

L.M.S.R. Staff Changes

Mr. R. D. Kerr, District Goods & Passenger Manager, Edinburgh, to be Steamship Superintendent (Scotland) and Manager of Caledonian Steam Packet Company, Gourock, in place of Mr. C. A. Bremner, retiring.

Mr. R. W. Bailey, District Engineer, Perth, to be Assistant (Staff & Organisation) to Chief Engineer, Watford H.Q., in place of Mr. W. P. Whitehead, retiring.

Mr. J. B. Halley, Assistant to District Engineer, Glasgow (Central), to be District Engineer, Perth.

Mr. E. Morgan, Assistant (Lighting & Heating Section), Chief Engineer's Office, Watford, H.Q., to be Lighting & Heating Assistant to Chief Engineer, Watford H.Q.

Mr. H. S. Turrell, Stationmaster, Carlisle, to be Stationmaster, London (Euston), in place of Mr. J. B. Harrison, deceased.

Mr. F. Shelley, Stationmaster, Watford Junction (also in charge of Watford North), succeeding Mr. H. S Turrell as Stationmaster, Carlisle.

London Railway Departmental Committee's £230,000,000 Plan

New north-south lines in deep-level tunnels

Proposals for the large-scale development of London's surburban passenger railway system were published on Monday in the unanimous report of the Railway (London Plan) Committee to the Minister of Transport. One of the major recommendations is that Southern Railway suburban services terminating at London Bridge, Charing Cross, Cannon Street, and Holborn Viaduct, should be put underground by the building of lines in deep-level tunnels. The new lines would be designed to provide high-speed through services between the suburbs south of the Thames and the suburban lines of the other main-line companies north of the river, giving direct access *en route* to many parts of the West End and City which are not now rail connected. Other projected railways, providing cross-London services, would bring the new lines in tunnel to over 100 route miles.

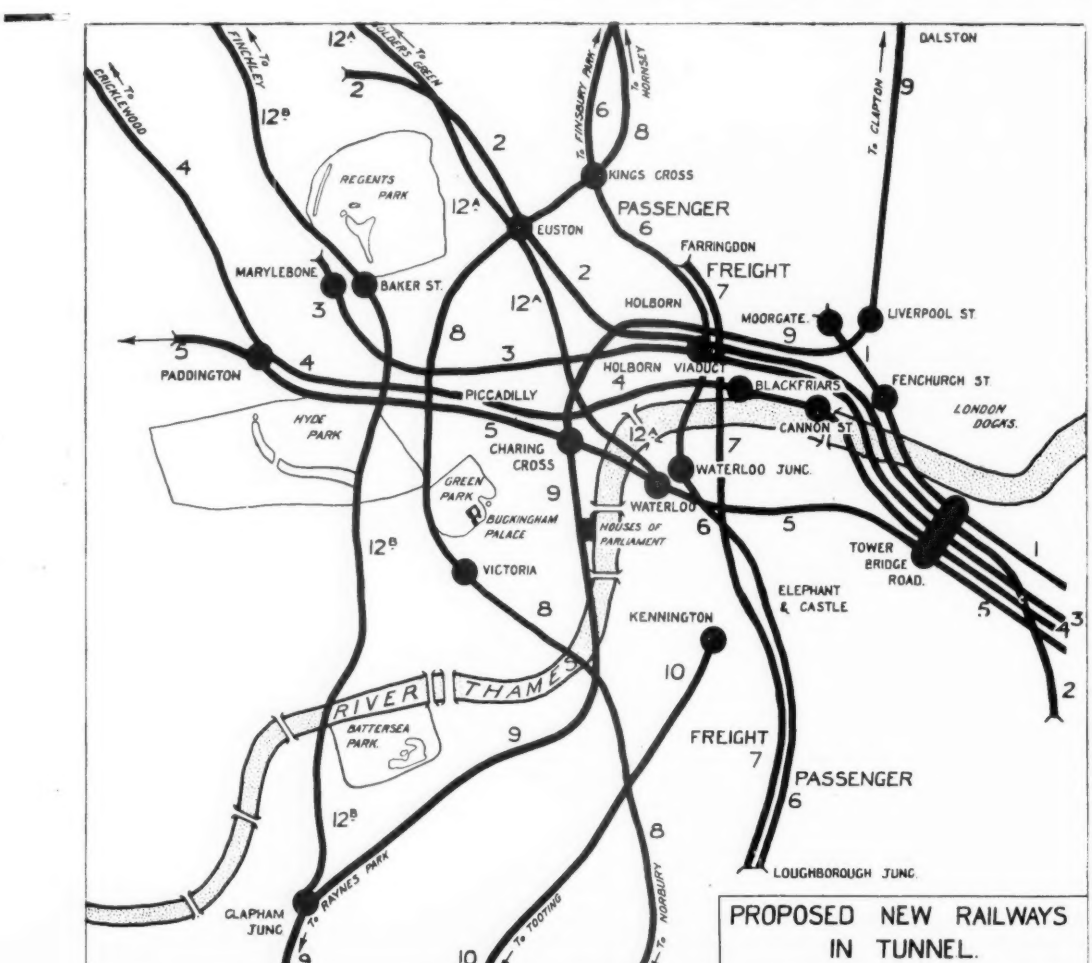
Except for about a dozen route miles of tunnel to be built to existing Tube dimensions, the tunnels would take standard suburban rolling stock with sliding doors. The intermediate deep-level stations would be limited as far as possible to focal points on the Tube system. They would be 30 ft. in diameter, with platforms 650 ft. long and 16 ft. wide.

If adopted, the scheme would do away with the railway bridges and viaducts between Westminster and London Bridges and open up the views of St. Paul's and Southwark Cathedrals. It would also lead ultimately to the disappearance of Charing Cross, Cannon Street, Holborn Viaduct and Blackfriars Stations with their present high-level approaches. Waterloo Station would remain, but a new station would be built on the site of the present Waterloo Junction, and London Bridge would be replaced by a station about half a mile distant, at Tower Bridge Road.

In February, 1944, the then Minister of War Transport appointed the Committee to examine the technical and operational aspects of those parts of the County of London Plan, 1943, which relate to the main-line and suburban railway system of London, and any alternatives or modifications which might be suggested by the railway companies and the L.P.T.B.

Professor Sir Charles Inglis was appointed Chairman. Expert railway technical opinion was represented by the late Mr. C. E. Fairburn, Chief Mechanical & Electrical Engineer, L.M.S.R., who was succeeded on his death last October by Mr. F. A. Harper, Mechanical Engineer (Electrical), L.M.S.R.; Sir Eustace Missenden, General Manager, Southern Railway; Sir Theodore Thomas, General Manager until October last, L.P.T.B.; and Mr. J. C. L. Train, Chief Engineer, L.N.E.R. The other members of the Committee were Mr. Geoffrey Crowther, Editor of *The Economist*; Lt.-Colonel Sir Alan Mount, Chief Inspecting Officer of Railways, Ministry of Transport; and Mr. G. L. Pepler, Chief Technical Officer, Ministry of Town & Country Planning.

Dealing with some of the "basic and practical considerations" on which the solution of the London Transport problem must be based, the Committee states that, as a broad principle, advantage should be taken of the superior speed and safety of the railways for the longer distances to relieve congestion on the roads. Railway competition has brought about a profusion of stations in London, conveniently placed for business communities, and it is necessary to retain them as close as possible to the centres of activity. Improvement and adaptation of existing facilities,



For description of numbered routes see text on opposite page

are preferable to sweeping changes. The railway system should remain substantially as laid out today, modernised where necessary, and adapted to meet town planning needs. On this existing framework the Committee proposes to superimpose certain new railways.

After hearing evidence from engineering and traffic experts, the Committee decided that, (1) as a general proposition, the railways serving London for passenger and goods operation should be electrified; (2) the underground system should be separated in general from the main-line tracks so far as inter-running is concerned; (3) deep-level stations for suburban traffic carried in standard-size rolling stocks are possible, provided sliding door stock is used and heavy luggage and parcels traffic can be considerably reduced without inconvenience; (4) it is possible to project suburban traffic across London in tunnel; and (5) deep-level stations for long-distance main-line traffic are impracticable, but sub-surface terminals (say 20 to 30 ft. below road level) could be operated where conditions are favourable.

Charing Cross Station

Serious consideration was given to the placing of Charing Cross and its approaches at deep level, but in view of the traffic dealt with at this station, the Committee is satisfied that there would be grave difficulties. The Committee therefore rejected the proposal of the County of London Plan that main-line trains should be worked at deep level at Charing Cross. Its own proposals provide, in another way, for the removal of the existing station, subject to the proviso that the station should not be removed until improved alternative facilities are available.

One of the major proposals of the County of London Plan for new railways is accepted by the Committee and placed in first priority. This is for two north-south tunnels to replace the line, mostly on viaduct, from Snow Hill, Farringdon, to Loughborough Junction. The suggestion made by the plan for a deep-level loop connecting Waterloo, Charing Cross, Blackfriars, Cannon Street and London Bridge is rejected on the ground that loop working at deep levels is not practicable.

Future Volume of Traffic

The Committee assumes that the total population of Greater London will remain stable for the next generation and that the tendency for migration outwards from the County of London will continue. The building of satellite towns beyond the green belt can be expected to make the increase in the volume of traffic less than it would otherwise be.

The bulk of regular passenger traffic on suburban railways consists of the movement to and from the inner zone. As income rises, the demand for transport rises more than proportionately. Peak-hour traffic has increased in recent years. Staggering of working hours has not proved acceptable in the inner zone, and the prospect of securing material relief in this way is not encouraging. For these reasons, the Committee assumes that the volume of travel will continue to increase.

New Railways

To do away with surface operation across the river, and so facilitate replanning of the south bank of the Thames, the Committee recommends:—

(1) Five double-track lines in tunnel to carry the Southern Railway suburban services now passing through or terminating at London Bridge Station. The tunnels would fan out towards the City and West End, linking up with suitable lines of the other main-line railways from the northern and western suburbs.

(2) The resiting of London Bridge Station at Tower Bridge Road.

(3) A north-south tunnel (Route 6) to do away with the viaduct between Loughborough Junction and Holborn Viaduct and the alteration of the existing route so that from the Elephant & Castle it proceeds northwards through Waterloo to Ludgate Circus and Holborn Viaduct, thence in tunnel to Mount Pleasant and Kings Cross, beyond which it would connect with the L.N.E.R. suburban system.

(4) A new underground railway (Route 7) for freight traffic, roughly paralleling the above passenger line but following the existing route through Blackfriars to Farringdon, where it would join the existing Metropolitan widened lines of the L.P.T.B. and make contact with the main-line system to the north.

(5) A new terminal station on the site of the existing Waterloo Junction Station for the main-line and outer-suburban trains now terminating at Charing Cross, Cannon Street, London Bridge, and Holborn Viaduct Stations. Surface trains (that is, main-line traffic) will reach this station from Tower Bridge Road by a partly or wholly new line running to the south of the present viaduct and further away from Southwark Cathedral.

The five new tunnels at London Bridge are considered necessary to carry the maximum peak traffic which it is estimated may reach 75,000 passengers per hour. The routes selected are:—

Route 1.—*Via* Fenchurch Street and Moorgate, connecting there with the existing Northern City line to Finsbury Park and thence with the Alexandra Park and Enfield Town branches of the L.N.E.R.

Route 2.—*Via* Bank, Holborn Viaduct, Holborn, Euston, and the L.M.S.R. line to Watford.

Route 3.—*Via* Bank, Holborn, Tottenham Court Road, Bond Street, Marylebone, and the L.N.E.R. line to High Wycombe and perhaps Aylesbury.

Route 4.—*Via* Cannon Street, Aldwych, Piccadilly Circus, Marble Arch, Paddington, Maida Vale, Cricklewood, and the L.M.S.R. line to St. Albans and Harpenden.

Route 5.—*Via* Waterloo, Charing Cross, Piccadilly Circus, Marble Arch, Paddington, and G.W.R. suburban system.

The report points out that there is no direct railway connection between Victoria, Mayfair, and Oxford Street, and that to get to Euston and Kings Cross from Victoria, passengers have to follow a roundabout route. There is pressing need for relief on the Northern tube line, and relief may also become urgently necessary on the Central Line and the northern section of the Piccadilly line with the expected post-war development of areas served by the L.N.E.R. Southern Railway tracks between Balham and Victoria and between Raynes Park and Waterloo are used almost to capacity; through facilities to the West End are desirable for passengers on trains now terminating at Waterloo; there is need to electrify certain sections of the L.N.E.R., not covered by the new works programme, 1935-40. To this end the Committee proposes:—

A new line (Route 8) from East Croydon in tunnel from Norbury *via* Streatham, Brixton, Stockwell, Vauxhall, Victoria, Hyde Park Corner, Bond Street, Euston, Kings Cross, and Finsbury Park, connecting with the L.N.E.R. routes to Hitchin *via* Potters Bar and *via* Cuffley.

A new line (Route 9) in tunnel from Raynes Park (where connection would be made with the Southern Railway) *via* Wimbledon, Clapham Junction, Vauxhall, Millbank, Westminster, Charing Cross, Holborn, St. Pauls, Liverpool Street, Dalston, and Clapton, where connection would be made with the Chingford Branch of the L.N.E.R.

New deep-level tubes to relieve the Northern Line. Route 10 would double the existing tube between Kennington and Tooting; Route 11 would extend the same tube from Morden to North Cheam; Route 12A would double the existing tube on its present alignment between Waterloo and Golders Green; Route 12B is an alternative proposal to 12A and would be a new tube line from Finchley *via* Golders Green, Baker Street, Knightsbridge, and Sloane Square to Clapham Junction.

Priority and Costs

It is estimated that the scheme would cost at pre-war price levels about £140 millions. The cost at present-day prices would be about £230 millions. Both these figures exclude the cost of electrification, and widening or other work, on main-line railways outside the proposed new tunnels. The Committee is advised that under the most favourable conditions the completion of the underground railway works would not take less than 30 years. It recommends that first priority be given to the following proposals (mileage and costs are given) in the order shown:—

		Route mileage	Cost £ millions
Routes 6 and 7	North-South passenger and freight tunnels	10½	13
Route 8	... East Croydon to Finsbury Park ...	14	24
Route 10	... Kennington to Tooting relief tube ...	5	1½
Route 4	... Tower Bridge Road — Paddington — Cricklewood and L.M.S.R. Line to Harpenden ...	12½	16
Route 9	... Raynes Park to Clapton	16	22
	Removal of Blackfriars and Holborn Viaduct Stations	—	—
	Totals	57½	76½
Second priority—			
Route 5	...Tower Bridge Road — Marylebone — L.N.E.R. line to High Wycombe...	9	13
	New Tower Bridge Road surface station	—	3¾
	New viaduct in the Borough ...	—	¾
	Relief tube for Northern line :		
Route 12A	... Waterloo to Golders Green ...	6	4
	or		
Route 12B	... Clapham Junction to Finchley ...	10	7½
Route 11	... Morden to North Cheam	2	1½
Third Priority—			
Route 5	... Tower Bridge Road — Paddington — G.W.R. line to Maidenhead ...	12½	17
	New terminal at Waterloo Junction	—	2½
	Removal of Charing Cross Station ...	—	—
Fourth Priority—			
Route 1	... Tower Bridge Road — Finsbury Park —L.N.E.R. line to Alexandra Palace and Enfield Town	8¾	10
Route 2	... Tower Bridge Road — Euston — L.M.S.R. line to Watford	7	10
	Removal of Cannon Street and London Bridge stations ...	—	—

If the decision in principle is favourable to the report, the Committee recommends that immediate steps be taken to investigate the proposals as a whole from the engineering aspect and to ensure full co-ordination.

British Automatic Co. Ltd.

The ordinary general meeting of the British Automatic Co. Ltd. was held at Winchester House, Old Broad Street, London, E.C.2, on May 8. Major R. D. K. Curling, M.C., Chairman & Managing Director, presided.

The Chairman, in the course of his statement circulated with the report and accounts, said:—

I am pleased to say that following the defeat of Germany, Major J. B. Dodge, D.S.O., D.S.C., M.C., who had been a prisoner of war for nearly five years, regained his freedom, and in July, 1945, my colleagues on the board and I had the pleasure of welcoming him back again to an active association with the company.

Last year I reported that the takings from our weighing machines in 1944 were the highest ever obtained in the history of the company. In 1945 the previous year's record was increased by over 7 per cent.

The activities of our amusement department were very drastically curtailed after Dunkirk, but immediately hostilities ceased we re-opened several sites, and are going ahead with others as and when labour becomes available to do so. Our greatest handicap is our lack of priority to obtain labour and materials to enable us to renovate and renew our machines, but you can rest assured that no stone is being left unturned to remedy this situation.

During the war, the company suffered the loss or damage of many automatic machines and other assets, apart from commodities, to the extent of £20,013, and as we are now free to disclose the figures, they have either been written off or otherwise dealt with as explained in the directors' report.

The items—premises, plant, etc., leases and goodwill, and investments in subsidiaries, together show an increase of £40,165, which is almost entirely accounted for by a number of new businesses acquired during the year. Stocks and stores are down by £6,220, and this is mainly due to the writing off of stocks of machine parts destroyed by enemy action.

Government securities, tax certificates, cash at bankers and in hand, together amount to £180,305, an increase of £32,206. Current liabilities are more than covered by these items.

Depreciation and renewals account has increased by £26,000, after providing £1,131 for machines which were scrapped during the year out of the allocation of £27,131 from profits.

We have again provided £15,000, less income tax thereon, £6,750, for deferred maintenance of machines. Only a few of our maintenance staff had returned by the end of the year.

Sundry creditors have increased by £13,355, which is mainly on account of the increase in commodity purchases.

We have had to provide £25,000 this year for E.P.T., which is the main reason for the increase in provision for current taxation. We did not have to make provision last year for this tax owing to accumulated deficiencies, but these have now been exhausted.

Trading profit has increased by £2,112, but net profit is reduced by £6,451 to £14,689 owing to the increased taxation. The balance of profit brought forward from 1944 was £11,190, and this, added to the profit for the year, makes a total of £25,879 which is being dealt with as set out in the directors' report.

Until personal points rationing is discontinued, and we can again sell chocolate and confectionery through our vending machines, we shall be unable to resume our full pre-war business with the railway companies, but I am pleased to say that our relations with them continue on a very friendly basis.

Our Belgian subsidiary, which was under the German yoke for over four years, is in reasonably good shape, considering the conditions under which it had operated, and the Manager, Mr. J. Rombouts, is to be congratulated on the way he has kept the company going.

Our Bristol District Manager, Mr. C. M. Widman, has retired after 42 years' excellent service, and our Accountant, Mr. S. B. Peake, after 53 years. The latter started as an office boy in 1892, five years after the company was incorporated, and we wish them both health and happiness in their retirement.

I would like to thank Mr. W. J. Devenish, the Assistant General Manager, for his services as Deputy for Mr. F. L. Timmins, who, I am glad to say, has returned as General Manager, after having done excellent work for the Ministry of Supply. I would also like to give a special word of appreciation to our managers and staff for their untiring efforts throughout the war, without which our earnings could not have been maintained.

We welcome back those of our staff who have returned to the company from the Services or munitions, and assure those who have yet to return that we shall be pleased to see them.

In conclusion, I would like to thank my colleagues on the board for the magnificent support they have given me throughout the war and during the year.

The report and accounts were adopted.

Census of Railway Employees

Since 1938, the Ministry of Transport has not published the customary annual return showing the number of staff employed by the railway companies of Great Britain, by the Railway Clearing House, and on the railway undertakings of the London Passenger Transport Board, during a selected week in March. These figures have continued to be taken, however, and, by the courtesy of the Minister, we were enabled to publish in our issue of October 20, 1939, some of the details compiled for the week ended March 11, 1939.

Since that time there has been no detailed official statement of the numbers of persons employed by the railway companies, although occasional mentions of total figures have shown that there has been an increase in total. In a table published in Colonel Sir Alan Mount's Accident Report for 1944, the number of persons employed by the railway companies at March 11, 1944, classified according to the nature of their employment, is included. This bears a close similarity to the pre-war official staff statistics, and, with its aid, we have prepared the accompanying table. With the exception of staff not employed directly, *e.g.*, staff employed by contractors, all persons in the service of the railways during the week of the census are taken into account. The figures represent the numbers of staff receiving salaries or wages for the full week, combined with the equivalent number of full-time workers in cases where employees were paid for less than the complete week.

NUMBER OF PERSONS EMPLOYED BY BRITISH RAILWAY COMPANIES

	At March 12, 1938	At March 11, 1939	At March 11, 1944
Capstanmen and Capstanlads	1,147	1,127	896
Carters and vanguards	23,733	24,098	21,470
Carriage cleaners	7,383	7,099	6,583
Carriage and wagon examiners	4,252	4,226	4,274
Checkers	8,828	8,788	10,102
Clerks	75,586	74,603	73,807
Cranemen and cranelads	557	538	693
Engine cleaners	7,564	6,629	5,021
Engine drivers and motor men	36,977	35,472	43,284
Firemen	33,474	32,040	38,375
Gatekeepers and gatelads	2,879	2,881	2,924
Greasers	1,829	1,784	1,643
Guards (goods and mineral) and brakemen	14,805	13,948	18,252
Guards (passenger)	7,632	7,597	7,244
Horse drivers (shunting)	261	226	171
Labourers	26,850	24,581	24,475
Lampmen and lamplads	1,772	1,711	1,442
Loaders and sheeters	5,733	5,553	6,163
Locomotive shedmen	8,856	8,601	10,281
Mechanics and artisans	100,806	94,972	100,884
Messengers	979	949	1,017
Number takers	1,987	1,908	1,946
Permanent-way men	58,420	56,589	47,956
Pointsmen	269	279	243
Policemen	2,348	2,345	4,070
Porters (goods)	13,519	13,005	19,499
Porters (passenger)	25,024	24,651	28,826
Shunters, yardsmen, etc.	17,216	16,692	18,224
Signal fitters and telegraph wiremen	6,198	6,563	7,161
Signalmen and signal box lads	28,089	27,765	26,344
Stationmasters, goods agents, and yardmasters	5,303	5,308	5,376
Ticket collectors and examiners	3,698	3,696	4,174
Miscellaneous	73,304	72,293	73,936
Total, railway servants	607,278	588,517	616,756

Noteworthy among the changes indicated during the war years are the reductions in the numbers of carters and vanguards, in engine cleaners, and in permanent-way men; and the increases in engine drivers, firemen, goods and mineral train guards, goods porters, and policemen.

Southern Railway Ambulance Final Competition

The first post-war amublance final competition of the Southern Railway was held at the Borough Polytechnic, Borough Road, London, S.E., on April 26, when twelve teams took part from all over the line. Although Mr. Edgar Uzzell, the company's Welfare Officer, has been the Ambulance Centre Secretary since 1939, this was the first occasion on which he has been able to organise a final competition. The judges were Dr. G. E. D. Tullis, of Hereford; Dr. M. M. Scott, of London; and Dr. J. Clayre, of Southampton. The results were as follow:—

	Marks
(1) Horsham	440
(2) Exmouth Junction No. 1	400½
(3) Waterloo No. 1	377½
(4) Eastleigh C.M.E.	348
(5) Basingstoke "A"	318
(6) Yeovil Motive Power	314
(7) Redhill Motive Power No. 1	313½
(8) New Cross Gate	311
(9) Southampton Docks "E"	307
(10) Ashford Works "A"	303
(11) Addiscombe	246½
(12) Ashford Motive Power	245

Mr. John Elliot, Deputy General Manager, presided at the presentation of prizes, which was performed by Mrs. Elliot. Mr. Elliot was supported by Mr. R. M. T. Richards, Traffic Manager, Mr. W. G. Pape, Wartime Economy & Salvage Liaison Officer, Mr. O. Cromwell, Chief Officer for Labour & Establishment, Mr. F. Gilbert, Deputy Chief Officer for Labour & Estab-

lishment, Mr. P. Nunn, London East Divisional Superintendent, Mr. T. E. Chrimes, Superintendent of Motive Power, and other officers of the company.

Mr. Elliot congratulated the Southern first-aiders on their enthusiasm. On behalf of the General Manager, Sir Eustace Missenden, he thanked the Southern ambulance men for the splendid work performed during the war years, when many acts of bravery and skill had been recorded. He wished them every success in the future, and intimated that next year it was hoped to revive the inter-railway competition.

Parliamentary Notes

London Midland & Scottish Railway Bill

The London Midland & Scottish Railway Bill was read the third time and passed in the House of Lords on May 1.

Questions in Parliament

North Kent Line Trains

Mr. E. P. Smith (Ashford—C.) on April 15 asked the Minister of Transport if he would state the reason for the unpunctuality of trains running on the North Kent line of the Southern Railway, between Maidstone and London.

Mr. Alfred Barnes in a written answer stated: The average late arrivals on weekdays on this route during the two weeks ended March 30 were 3·1 minutes for down trains and 3·5 minutes for up trains. These delays were mainly due to the operation of four speed restrictions in the down direction and three in the up direction, two of them due to war damage.

Coal Supplies for Railways

Lieutenant William Shepherd (Bucklow—C.) on April 16 asked the Minister of Fuel & Power what steps he was taking to ensure that main-line railways were supplied with coal of quality which would enable them to maintain efficient running.

Mr. E. Shinwell (Minister of Fuel & Power): Every endeavour is made to ensure as far as possible that the main-line railways are supplied with coal of suitable quality; but so long as there is a shortage of the best large coal to meet all requirements, the inclusion in the railways' supplies of some qualities which they would not normally use cannot be avoided.

Railway Personnel in Peace Procession

Brigadier R. Rayner (Totnes—C.) on May 2 asked the Secretary of State for the Home Department whether the personnel of our railways were to be represented in the Peace procession, in view of their special connection with the Armed Forces throughout the war.

Mr. Chuter Ede (Secretary of State for the Home Department): Yes.

Brigadier Rayner: Will the Home Secretary remember that railwaymen in railway uniform provided the lines of communication in Great Britain for all the Armed Forces during the war, and will he see that they have a specially honourable place in the procession?

Mr. Ede: It would be very difficult for me, in the form of question and answer, to decide this very difficult question of priority. I hope the populace will hold in equal honour all the people who did what they were called on to do.

Commander Douglas Marshall (Bodmin—C.): Will women be equally represented in this procession?

Mr. Ede: Women will be represented, but the basis of equality in a case like this is a matter of high controversy into which I do not intend to enter.

Late Running of Long-Distance Trains

Colonel F. J. Erroll (Altrincham—C.) on April 18 asked the Minister of Transport how many long-distance passenger trains had arrived at their terminal destinations during the month of March within ten minutes of their advertised arrival time, and how many had been more than one hour late.

Mr. Alfred Barnes in a written answer stated: During the four weeks ended March 23, out of a total of 26,924 long-distance express passenger trains, 18,664 were not more than 10 minutes late, and 709 were more than one hour late.

Reservation of Seats on Trains

Captain A. E. Marples (Wallasey—C.) on April 16 asked the Minister of Transport if he was aware that at Euston Station seats were still being reserved by porters for passengers; that on the 5.30 p.m. train to Liverpool on Friday, March 29, all six seats in one compartment had been reserved by porters; and if he would see that steps were taken to stop that undesirable practice.

Mr. Alfred Barnes stated in a written answer: Instructions to platform staff prohibit the reservation of seats by porters unless the passenger is present at the time. Inspectors do their best to ensure that these instructions are enforced, but it is possible that there may be occasional breaches.

Aberdeen Train Services

Colonel C. N. Thornton-Kemsley (Kincardine & Western—C.) on March 18 asked the Minister of Transport if he was aware that county cricket championship matches at Aberdeen on six Saturdays during the coming season might have to be cancelled unless the last trains south could be altered from 5.15 p.m. (L.N.E.R.) and 5.25 p.m. (L.M.S.R.) to the pre-war times of 7.30 p.m. and 7.45 p.m., respectively; and whether, in the interests of the public and of those anxious to play or watch cricket, the necessary additions could be made to the train service on Saturdays during the summer months.

Mr. Hector Hughes (Aberdeen North—Lab.) also asked the Minister of Transport if he would announce the revised spring and summer transport, late on Saturday evenings, to and from the city of Aberdeen, soon enough to permit the local cricket and other sporting clubs to arrange their programmes of events for the forthcoming season.

Mr. Alfred Barnes: The practicability of including later trains from Aberdeen in the summer timetable will be considered and I will inform Colonel Thornton-Kemsley and Mr. Hughes as soon as a decision is reached.

Colonel Thornton-Kemsley: When that consideration is being made, will the Minister bear in mind that in England county cricket can be seen almost every day of the week, but in Scotland it is only on six days that county cricket can be seen, and cricket supporters are relying on the Minister to provide transport for it?

Mr. Boothby: Can the Minister state what is the advantage of starting these trains so early?

Mr. Hughes: In considering this question, will the Minister realise that it affects not only the sporting Aberdonians, but also the commercial, industrial, and social interests in the city?

Mr. Barnes: I can only repeat that this matter will receive consideration when the new time lists are brought out. With regard to the question of the timing of trains, I think Mr. Boothby will appreciate that the timing of trains involves a number of other services and a single train route cannot be taken into account by itself.

British Railways' American Advertisements

Mr. T. Driberg (Maldon—Lab.) on April 30 asked the Chancellor of the Exchequer if he had considered the issue of the *New York Times* for March 21, a copy of which had been sent to him, in which extensive advertising space had been secured by the Southern Railway, G.W.R. and L.N.E.R., for the purpose of publishing attacks on the nationalisation policy of His Majesty's Government; why dollars had been made available for this purpose; and what steps he was taking to check a practice which was wasteful of dollars and calculated to damage the prestige of Great Britain in the eyes of the United States public.

Mr. Hugh Dalton (Chancellor of the Exchequer): Yes. In accordance with long-standing practice, the railways paid for the publication of the speeches of the Chairmen at the annual general meetings. I do not think it would be reasonable to require any change in this arrangement.

Mr. Driberg: Has the Chancellor any means of checking these unpatriotic activities?

Mr. Dalton: I am quite content to allow free speech even to the directors of railway companies.

Compensation for Railway Directors and Staff

Mr. W. T. Proctor (Eccles—Lab.) on April 15 asked the Minister of Transport if he would state the amount of compensation paid for loss of office under the Railways Act, 1921, to railway directors; the amounts paid in compensation to officers receiving salary at the rate of more than £350 per annum; the amount of compensation paid to members of the railway staff receiving £350 or less per annum; the number of cases settled by agreement and the number referred to the arbitrator in each class above; and the legal costs of the cases decided by the arbitrator, to the railway companies, and to the railway trade unions.

Mr. Alfred Barnes, in a written answer, stated: Inquiries have been made and I am now able to inform you that compensation totalling £304,146 was paid to directors of 25 constituent companies who suffered loss by abolition of their office under the Railways Act, 1921. The amount does not include one constituent company for which no record can be found. The figures in respect of individual directors and the compensation paid to directors of absorbed companies are not readily available, nor are the amounts paid as compensation to members of the railway staff.

Cheap Tickets for Juvenile Parties

Mr. P. L. E. Shurmer (Birmingham, Sparkbrook—Lab.) on April 15 asked the Minister of Transport if, in view of the re-opening of camps at the seaside for boys' brigades, and so on, he would consider re-introducing cheap fares for distances over 60 miles.

Mr. Alfred Barnes stated in a written answer: Yes. I am glad to say that the restriction of distance has been removed, so parties of juveniles can obtain cheap travel tickets for journeys of any distance to and from camp. The other conditions to which these tickets are subject will continue to apply.

Notes and News

Madras Railway Annuities.—It is notified in *The London Gazette* of April 12 that a total sum of £6,869,480 12s. 6d. is now invested for the purpose of providing a sinking fund in respect of Annuities Class "B."

Colvilles Limited.—A final dividend for 1945 of 5 per cent. has been declared, making 8 per cent. for the year, the same as in 1944. Preliminary figures show a profit for the year of £564,235, as against £537,199 in 1944.

Railways (Revocation of Transport Restrictions) Direction.—The Minister of Transport on April 17 gave the Railways (Revocation of Transport Restrictions) Direction, 1946, affecting the transport by rail of flour, oatmeal, oat flakes and oat flour.

British Automatic Co. Ltd.—The net profit of £14,689 for 1945 compares with £21,140 in the previous year, but the 1945 accounts show a provision of £25,000 for E.P.T., which did not occur in 1944. The Directors again declare a dividend of 6 per cent. The carry-forward of £10,974 compares with £11,190 brought in.

Railway Students Association.—Arrangements are being made to revive the activities of the Railway Students Association, which were suspended in 1939 because of war conditions. Members should advise their committee representative, or the Honorary Secretary, Superintendent's Office, L.N.E.R., Liverpool Street Station, of their present addresses.

British Rolling Stock for New Zealand.—New Zealand is placing orders for over £5,000,000 of British rolling stock as part of the Dominion railway expansion programme. Three thousand 10-ton goods wagons, of a value of about £1½ millions, 40 electric trains and 26 diesel electric trains are among the contracts. The wagons are for delivery next year, but the supply of the trains will be spread over several years.

Yorkshire-Blackpool Joint Motorcoach Services.—The joint services from various towns in Yorkshire to Blackpool and Fleetwood, which are operated by a group of railway-associated bus companies, were resumed on April 18. The companies concerned are Ribble Motor Services Limited, Yorkshire Traction Co. Ltd., West Yorkshire Road Car Co. Ltd., Yorkshire Woollen District Transport Co. Ltd., and Hebble Motor Services Limited, which operate under the combined title of Yorkshire-Blackpool Joint Services. The services at present in operation link Leeds, Bradford, Keighley, and Burnley, with Blackburn, Preston, Blackpool, and Fleetwood. A separate route (jointly operated with William Pyne & Sons) links Harrogate with Blackpool.

Alfred Herbert Limited.—The Directors have declared a dividend for the year ended October 31 last of 15 per cent., tax free, together with a non-taxable payment of 5 per cent. For the preceding year the dividend was 30 per cent. Net profit for the year was £461,379, after taxation and all other expenses, and including an estimated recovery of E.P.T. This compares with £601,644 in the preceding year.

Iron and Steel Production.—The following figures show the production of pig-iron, and of steel ingots and castings, for January, February and March last, compared with the same months of 1945:—

	Pig iron (tons)		Steel ingots and castings (tons)	
	Weekly average	Annual rate (000s omitted)	Weekly average	Annual rate (000s omitted
March, 1946 ...	147,300	7,660	255,700	13,295
February, 1946 ...	146,100	7,600	247,200	12,854
January, 1946 ...	143,600	7,467	228,800	11,898
March, 1945 ...	141,400	7,354	246,100	12,799
February, 1945 ...	136,700	7,109	241,400	12,553
January, 1945 ...	127,100	6,609	216,300	11,248

Road Transport Nationalisation.—In view of the proposal to nationalise road transport, Mr. R. P. Beddow, Chairman of the Trent Motor Traction Co. Ltd., emphasised in his speech at the company's annual meeting some important factors in favour of leaving the industry undisturbed. Mr. Beddow pointed out that under the Road Traffic Act, 1930, the industry was already regulated in the interests of the travelling public and the employees; services, vehicles, drivers and conductors were all subject to licence, and the Traffic Commissioners appointed by the Minister of Transport had to be satisfied that the fares were not unreasonable. The main-line railway companies were financially interested in most of the large omnibus companies and a very considerable amount of co-ordination existed between the two forms of transport. Municipal and company road passenger transport undertakings had over a period of years entered into many valuable schemes of co-ordination. Under its present set-up, therefore, the industry already was regulated adequately in the public interest, and provided excellent services at reasonable charges.

Increased and Accelerated London—Brussels Service.—On Monday, May 6, a daily through service (Sundays included) between Calais and Brussels was restored in connection with the present Southern Railway Calais service from Victoria. The service on the French side is *via* Lille and Blandain, with first, second, and third class carriages and restaurant car between

L.M.S.R. Ambulance Competition

This illustration shows Sir Robert Burrows (standing, left), Chairman of the L.M.S.R., with Mr. H. J. Comber (standing, right), together with other officers of the company, at the presentation of awards in the L.M.S.R. Ambulance Competition. (*See last week's issue, page* 493)

British and Irish Railway Stocks and Shares

Stocks	Highest 1945	Lowest 1945	Prices May 7, 1946	Prices Rise / Fall
G.W.R.				
Cons. Ord.	60¾	47½	57	+ 1
5% Con. Pref. ...	124¾	104¾	113	—
5% Red. Pref. (1950)	107¾	101½	103	—
5% Rt. Charge ...	137¾	120	126½	—
5% Cons. Guar. ...	135½	117	123½	+ 1
4% Deb.	118	106	112	—
4½% Deb.	119½	108	112½	—
4½% Deb.	124½	111½	117	—
5% Deb.	138	124	128	+ 1
2½% Deb.	83	74½	85½	—
L.M.S.R.				
Ord.	33	23¼	28	—
4% Pref. (1923) ...	65	50	58	+ 1
4% Pref.	80¾	69½	80	—
5% Red. Pref. (1955)	106½	99½	103½	+ 2
4% Guar.	106½	97	104	+ ½
4% Deb.	110½	102	109	+ 1
5% Red. Deb. (1952)	110½	103½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	8½	5½	5¾	— ¼
Def. Ord.	4¼	2¾	3	—
4% First Pref. ...	62½	49½	57	+ 1
4% Second Pref. ...	33½	24½	28	+ ½
5% Red. Pref. (1955)	103	96	99	+ 1
4% First Guar. ...	104½	95	103	+ 1
4% Second Guar. ...	97	89½	95	+ 1
3% Deb.	91¾	82¼	95	+ ¼
4% Deb.	109¾	101	108½	+ ¼
5% Red. Deb. (1947)	103¼	100	100	—
4½% Sinking Fund Red. Deb. ...	106⅜	103	104½	—
SOUTHERN				
Pref. Ord.	79½	63	77½	+ 1½
Def. Ord.	27	20⅛	21½	—
5% Pref.	124½	104	113	+ ½
5% Red. Pref. (1964)	117	107	108½	—
5% Guar. Pref. ...	135¾	117	122½	—
5% Red. Guar. Pref. (1957)	117	106½	108½	—
4% Deb.	117	104½	110	—
5% Deb.	137	124	128½	+ 2
4% Red. Deb. (1962-67)	112	104½	108½	+ 1
4% Red. Deb. (1970-80)	113½	104	109½	+ 1
FORTH BRIDGE				
4% Deb.	106	103	105	+ 1
4% Guar.	106	101	104	+ 2
L.P.T.B.				
4½ "A"	125	117	123½	—
5% "A"	135	127	133½	—
3% Guar. (1967-72)	100	97½	104	—
5% "B"	125½	115	118½	—
"C"	70	58	59	— 1
MERSEY				
Ord.	37	31½	30½	—
3% Perp. Pref. ...	72½	68½	72	—
4% Perp. Deb. ...	104½	104	103	—
3% Perp. Deb. ...	84	78½	81	—
IRELAND*				
BELFAST & C.D.				
Ord.	8⅛	6	7½	—
G. NORTHERN				
Ord.	34	24½	37½	—
Pref.	52½	42½	58½	+ 1½
Guar.	80	68	84	—
Deb.	97½	87½	101½	—
IRISH TRANSPORT				
Common	—	—	16 9	—
3% Deb.	—	—	101½	—

* Latest available quotation

OFFICIAL NOTICES

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiment. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. *Price* 2*s*. *Post free* 2*s*. 3*d*.

RAILWAYS AND LOCOMOTIVES. Books, Pamphlets, Maps and Prints. All wanted. Send on approval stating price.—Grafton & Co., 51, Great Russell Street, London, W.C.1.

STATION DESIGN. A striking example of modern British practice at the important wayside station of Luton. Reprinted from *The Railway Gazette*, July 7, 1944. *Price* 1*s*. *Post free* 1*s*. 2*d*.

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffics, with an account of economic problems; the motive power used; and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. *Price* 1*s*. *Post free* 1*s*. 2*d*.

Calais and Brussels. Also on May 6 the sea crossing on the London—Brussels service *via* Folkestone—Ostend was reduced by 2 hr., with a total saving on the whole journey of 1½ hr. Travellers by this service leave London at 9 a.m.

Henry Spurrier Memorial Lecture, 1946-47.—Mr. J. S. Wills, M.Inst.T., has accepted the invitation of the Institute of Transport to deliver the Henry Spurrier Memorial Lecture for 1946-47.

Wm. Beardmore & Co. Ltd.—Net profit of the company for 1945 was £139,923, a decline of £37,422, but a final dividend on the ordinary stock of 7 per cent. maintains the distribution for the year at 10 per cent. The carry-forward is £317,235, against £254,262, but the figure last year was after the allocation of £100,000 to war contingencies reserve.

Essential Work Orders: Iron and Steel Industry.—The extent of the withdrawal of the iron and steel industry from the scope of the Essential Work Orders on May 15 next has been widened to cover the following additional sections of the industry: Iron founding, iron and steel tubes, pipes and fittings, and the steel sheets and tinplate section. This means that the whole of the iron and steel industry will be withdrawn from the scope of the Essential Work Orders on May 15.

Working Model of 1833 Locomotive.—Several of the historical models in the *News Chronicle* centenary railway exhibition at Charing Cross Station, London Transport, have been loaned by Mr. C. W. Meredith, of Craigard, Broughty Ferry, Angus, and were built by Mr. E. Exley, A.I.Mech.E., of Bradford. All these are working models, and have done much to earn money for charities that their owner supports in Dundee. The model illustrated is of the *Earl of Airlie* locomotive of 1833 on the Dundee & Newtyle Railway.

Dean & Dawson Limited: Portsmouth Office.—The Portsmouth Office of Dean & Dawson Limited, at 6, Pearl Buildings, Commercial Road, has been re-opened to the public. The pre-war Branch Manager, Mr. M. D. Foreman, is in charge.

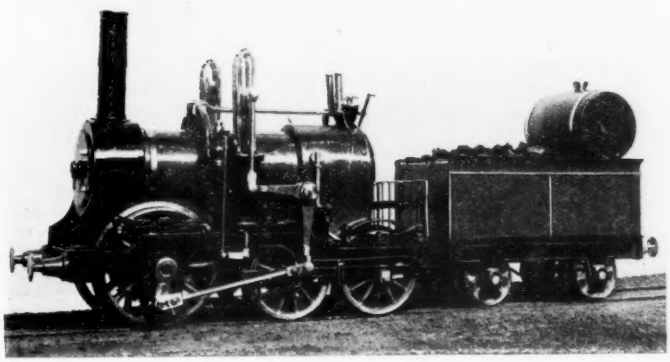
G.W.R. Stations to be Decorated for Victory Celebrations.—Twelve G.W.R. stations and the company's Royal Hotel, Paddington, will be decorated for the victory celebrations on June 8. The stations concerned are: Birmingham Snow Hill; Bristol Temple Meads, Cardiff, Exeter, Gloucester, Newport, Plymouth, Reading, Swansea, Windsor, Wolverhampton, and Worcester. The Royal Hotel at Paddington will also be floodlit.

L.M.S.R. London Train-Control System.—With the opening on May 6 of a new District Operating Manager's Office for the London (Western) District, the L.M.S.R. has advanced a further stage towards completion of a scheme for the reorganisation of its 42 control areas into 19 operating districts, each under a district operating manager. Mr. H. B. Taylor is already functioning as Operating Manager for the London (Midland) District, with headquarters at St. Pancras, and on May 6 Mr. W. B. Shelton began his new duties at Euston. Each exercises control over every train moving within a 50-mile radius of the respective termini. The appointments of Mr. Taylor and Mr. Shelton have already been recorded in our Personal columns.

British Wagon Co. Ltd.—A statement by Mr. W. H. Copley (Chairman) circulated with the report and accounts of the British Wagon Co. Ltd., described the company's work in wartime in supplying funds for industry for the provision of new rail wagons, road transport vehicles, and agricultural and engineering plant, to the extent of some £5 million. He was glad to say that the hire purchase facilities for industrial needs which the company offered were accepted by industry as having a useful place and purpose in peacetime re-equipment. The same dividend as in the previous year was being paid, and the board had decided to pay on Empire Day a special Victory dividend equal to the dividend for the year.

Association of Supervisory Staffs & Engineering Technicians.—The Association is organising a public meeting, to be held at 7 p.m. on May 21 in the Central Hall, Westminster, when the Rt. Hon. Herbert Morrison, M.P., Lord President of the Council, will speak. Tickets for reserved seats are 1s. each. The object of the meeting is to support the Government campaign for a co-operative drive in support of prosperity.

Working Model of an Early Scottish Engine



Model of the "Earl of Airlie" locomotive, Dundee & Newtyle Railway, exhibited at the "News Chronicle" centenary railway exhibition at Charing Cross

Photo.] [*H. Leslie Overend*

Contracts and Tenders

Mr. W. R. Bedford, Area Manager at Bristol for A. C. Wickman Limited, has been appointed Area Manager at Manchester. Mr. W. J. Bottomley has been appointed Area Manager at Bristol. Mr. H. Eckersley, previously Area Manager at Manchester, has been appointed Manager of the newly-formed Tungsten Carbide Development Division with headquarters at Torrington Avenue, Coventry.

Below is a list of orders placed recently by the Egyptian State Railways:—

Chance Bros. Ltd.: Gauge glass.
S. & C. Bishop & Co. Ltd.: Gauge glass.
Pilkington Bros. Ltd.: Glasses.
Brown Bayley's Steel Works Limited: Flat steel spring.
Morgan Crucible Co. Ltd.: Carbon brushes.
Sisson Brothers & Co. Ltd.: Paint.
P. & W. MacLellan Limited: Carbide paper, etc.
Newton Bros. (Derby) Ltd.: Telegraph and telephone material.
Belling & Lee Limited: Telegraph and telephone material.
Creed & Co. Ltd.: Telegraph and telephone material.
Yorkshire Patent Steam Wagon Company: Superheater.
Steel, Peech & Tozer Branch of the United Steel Cos. Ltd.: Wheel tyres.
Tubes Limited: Steel tubes.
Trier Bros. Ltd.: Lubricators.
Consolidated Pneumatic Tool Co. Ltd.: Pneumatic drills, etc.
Alley & MacLellan Limited: Valves.
Standard Telephones & Cables Limited: Telegraph and telephone material.
Holden & Brooke Limited: Railcar spares.
Associated Locomotive Equipment Limited: Spring discs.
North British Rubber Co. Ltd.: Rubber feed pipes.
Arthur Balfour & Co. Ltd.: Files and saws.

Forthcoming Meetings

May 18 (*Sat.*).—The Permanent Way Institution, 39, Victoria Street, London, S.W.1. (London Section). Visit to Southampton Docks (S.R.).

Railway Stock Market

International uncertainties and fears that U.S. approval of the British loan may be delayed continued to have a restraining influence on stock markets. British Funds, although firm, became quieter, but satisfaction with financial results, and market estimates of future benefits from E.P.T. abolition, maintained cheerfulness in industrial shares. Imperial Chemical were firm on the proposed big expansion of the dyestuffs section of the group, building and road-making shares improved and shipping shares again moved higher. An outstanding feature was a rally in the iron and steel section; buyers were attracted by the view that in many cases the recent heavy fall on the nationalisation developments had been carried too far. Later, however, the tendency was less firm in the continued absence of an official statement specifying which sections of the industry it is proposed to nationalise. Shares of locomotive building and engineering companies were more active, particularly Beyer Peacock and Vulcan Foundry.

Home rails, after showing further gains, became easier in accordance with the general market tendency, and were unaffected by the "revolutionary recommendations" of the Railway (London Plan) Committee. Indeed, the view prevails that although over a period there is little likelihood of home rails moving to lower levels, there is probably scope for good appreciation as time proceeds, confidence persisting that in the event of nationalisation, stockholders will be offered a fair compensation basis. On the other hand, sentiment was influenced by the further decline in traffic revealed for the four-weekly period to April 21. It is true that the trend of traffics in no way affects the fixed rental payable to the railways under the existing control agreement, and, moreover, it is confidently expected that the latter will remain in force until the future of the railways has been finally decided. Moreover, traffics still compare with a period of wartime activity, and they must inevitably reflect current reconversion and transition factors in industry. Indeed, the aggregate decrease to date is no heavier than might have been expected. It is true that the figures emphasise the need for "a square deal" for the railways on the lines proposed just before the war, because whatever the future of the railways in respect of nationalisation, railway charges will have to be brought into line with the higher costs of materials and labour. It has been suggested in some quarters that the declining traffics may react unfavourably for stockholders in the event of nationalisation, because the traffic trend may have a bearing on compensation terms; but this is not regarded seriously because the current period is in many respects abnormal, particularly in the absence of a square deal for the railways.

Comparison with a week ago shows that although best levels have not been maintained, prices are higher on balance. Great Western at 56¼, compares with 55¼ a week ago, and the 5 per cent. preference has remained at 113, the guaranteed stock at 123½, and the 4 per cent. debentures at 113 moved fractionally higher. L.M.S.R., after touching 28, receded to 27⅝, comparison being with 27½ a week ago. L.M.S.R. senior preference was fractionally higher at 80½, and on balance the 1923 preference improved from 56½ to 57½ and was 58 at one time; the guaranteed stock held its rise to 104. L.N.E.R. second preference at 27¾ was ½ better, and the first preference has risen on balance from 55½ to 57. L.N.E.R. first guaranteed further improved from 101½ to 102½ and the second guaranteed from 94½ to 95½. Among Southern stocks, the deferred was 21⅜, comparing with 21½ a week ago, but the preferred has risen from 75½ to 77½ with the 5 per cent. preference better at 113. London Transport "C" remained at 59.

Argentine rails have fluctuated, rising on reports of resumption of talks with the Argentine Government, later reacting on the denial of this and becoming steadier on the possibility that Sir Montague Eddy may visit the Republic next month. Sentiment was aided by the further payment in respect of interest arrears on Central Argentine 5 per cent. debentures. Buenos Ayres Great Southern was 11, against 10 a week ago, the 5 per cent. preference 25¼, compared with 24½, and the 4 per cent. debentures moved higher at 69. Buenos Ayres Western 4 per cent. debentures at 64 were also a point better on balance, and Central Argentine 4 per cent. and 5 per cent. debentures 61¼ and 65 xd. respectively. Among preference stocks, Buenos Ayres Western 4½ per cent. was good at 33. A feature was a marking up from $340 to $500 of the 7½ per cent. first income debentures of the Mexnorwest Holding Company, after details of the agreement for the sale of properties of the Mexico North-Western Railway Company.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1944 5	No. of Week	Aggregate traffics to date: Totals 1945 6	Aggregate traffics to date: Totals 1944 5	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: May 7, 1946
				£	£		£	£	£				
South & Central America	Antofagasta	834	28.4.46	36,140	− 2,610	17	560,920	517,650	+ 43,270	Ord. Stk.	12	8¼	9
	Arg. N.E.	753	27.4.46	ps.318,900	+ ps.57,800	43	ps.12,737,800	ps.12,772,900	− ps.35,100	,,	10	5¼	5
	Bolivar	174	Apr., 1946	4,287	− 610	17	18,402	20,965	− 2,563	6 p.c. Deb.	8½	5½	6½
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	20
	B.A. Pacific	2,771	27.4.46	ps.2,382,000	− ps.8,000	43	ps.98,282,000	ps.94,334,000	+ ps.3,948,000	Ord. Stk.	7	5	6
	B.A.G.S.	5,080	27.4.46	ps.3,715,000	− ps.341,000	43	ps154,264,000	ps.145,080,000	+ ps.9,184,000	Ord. Atk.	13⅜	10½	11
	B.A. Western	1,924	27.4.46	ps.1,285,000	− 198,000	43	ps.51,845,000	ps.48,819,000	+ ps.3,026,000	,,	12½	9½	10½
	Cent. Argentine	3,700	27.4.46	ps.3,328,700	+ ps.523,450	43	ps135,826,379	ps.124,587,450	+ ps.11,238,929	,,	9¾	7	7
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2⅜	3½
	Cent. Uruguay	970	27.4.46	45,315	− 2,254	43	1,683,237	1,491,686	+ 191,551	Ord. Stk.	7½	4	7½
	Costa Rica	262	Mar., 1946	30,768	− 34	38	252,872	203,304	+ 49,568	Stk.	16½	13	12½
	Dorada	70	Mar., 1946	26,161	+ 2,061	13	85,975	82,705	+ 3,270	1 Mt. Deb.	103	102	101½
	Entre Rios	808	27.4.46	ps.426,600	− ps.63,500	43	ps18,280,800	ps.17,038,700	+ ps.1,242,100	Ord. Stk.	7½	4½	5½
	G.W. of Brazil	1,030	27.4.46	25,400	− 100	17	515,900	456,800	+ 59,100	Ord. Stk.	30 −	23 6	20 −
	Inter. Ctl. Amer.	794	Mar., 1946	$990,479	+ $192,442	13	$2,914,465	$2,280,411	+ $634,284	—	—	—	—
	La Guaira	22¼	Apr., 1946	5,488	− 1,018	17	22,338	22,416	− 78	5 p.c. Deb.	78	70	61½
	Leopoldina	1,918	27.4.46	62,407	+ 19,898	17	969,890	759,962	+ 209,928	Ord. Stk.	4½	3½	3¾
	Mexican	483	30.4.46	ps.1,283,000	+ ps386,600	17	ps.14,564,700	ps.10,669,800	+ ps.3,894,900	Ord. Stk.	¼	¼	1¼
	Midland Uruguay	319	Mar., 1946	15,555	− 2,295	37	163,841	156,831	+ 7,010	—	—	—	—
	Nitrate	382	30.4.46	10,138	− 4,206	17	75,908	58,757	+ 17,151	Ord. Sh.	75 6	67 6	76 3
	N.W. of Uruguay	113	Mar., 1946	4,444	− 1,384	37	49,140	51,036	− 1,896	—	—	—	—
	Paraguay Cent.	274	26.4.46	£64,020	− £1,014	43	£2,595,823	£2,577,276	+ £18,547	Pr.Li.Stk.	79⅝	77	75½
	Peru Corp.	1,059	Apr., 1946	149,091	+ 23,048	40	1,401,933	1,296,522	+ 105,411	Pref.	10⅜	7⅛	10½
	Salvador	100	Mar., 1946	c 175,000	− c 27,000	36	c 1,255,000	c 1,159,000	+ c 96,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60¾	50½	53
	Taltal	156	Mar., 1946	3,530	+ 205	40	28,020	23,370	+ 4,650	Ord. Sh.	17 −	10 6	16 3
	United of Havana	1,301	27.4.46	86,278	+ 29,964	43	2,482,580	2,354,392	+ 128,188	Ord. Stk.	3	1	1¼
	Uruguay Northern	73	Mar., 1946	1,477	− 361	37	15,691	14,295	+ 1,396	—	—	—	—
Canada	Canadian National	23,569	Mar., 1946	6,520,600	− 888,600	13	18,471,800	20,168,600	− 1,696,800	—	—	—	—
	Canadian Pacific	17,037	30.4.46	1,485,000	− 257,600	17	18,742,000	20,006,400	− 1,264,400	Ord. Stk.	24	14⅜	22¼
Various	Barsi Light†	202	Mar., 1946	34,282	+ 7,537	52	312,315	269,828	+ 42,487	Ord. Stk.	131	123	111
	Beira	204	Feb., 1946	63,146	− 9,155	20	337,628	386,578	− 48,950	—	—	—	—
	Egyptian Delta	607	10.4.46	16,709	− 1,367	2	16,709	18,076	− 1,367	Prf. Sh.	10	8⅛	6
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55½	71½
	Mid. of W. Australia	277	Feb., 1946	15,858	+ 464	32	134,118	155,340	− 21,222	Inc. Deb.	97½	85	75
	Nigeria	1,900	Feb., 1946	350,919	− 35,117	46	3,153,983	3,515,685	− 361,702	—	—	—	—
	Rhodesia	2,445	Feb., 1946	466,118	+ 8,293	20	2,476,064	2,526,805	− 50,021	—	—	—	—
	South African	13,301	6.4.46	1,088,441	+ 128,532	1	1,035,894	902,733	+ 133,161	—	—	—	—
	Victoria	4,774	Jan., 1945	1,204,720	− 75,151	—	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee